यातायात
की कहानी

यातायात की कहानी

लेखक

मीर नजाबत अली

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

प्रकाशकीय

विश्व का कोई भी देश पुराण-कथा और आख्यान के क्षेत्र में, जो आज भी भारत के जन-जीवन में व्याप्त है, इस देश का मुकाबला नहीं कर सकता। भारत-भूमि ने अनेक महान चिंतकों, समाज-सुधारकों, संतों, धार्मिक नेताओं एवं महान राष्ट्र नायकों को समय-समय पर जन्म दिया है। हमारी संस्कृति की धारा अटूट रही है और हमारी सांस्कृतिक विरासत अनमोल है। किशोरों को इस सांस्कृतिक सम्पदा से परिचित कराने के उद्देश्य से परिषद् ने पूरक-पठन-साहित्य के प्रकाशन की योजना बनाई है। इसके अन्तर्गत १४ से १७ वर्ष के आयु-वर्गों के बच्चों के लिए कई पुस्तक मालाएँ प्रकाशित की जा रही हैं। इनमें राष्ट्रीय एकता माला, आधुनिक समाज-सुधारक, भारत के संत कवि, हमारी सांस्कृतिक सम्पदा, हमारे धार्मिक नेता आदि प्रमुख हैं। ये पुस्तिकाएँ हिन्दी और अंग्रेजी में साथ-साथ प्रकाशित की जा रही हैं। कुछ मूल रूप से हिन्दी में लिखी गई हैं, कुछ को अंग्रेजी से रूपांतरित किया गया है।

प्रस्तुत पुस्तिका मूल रूप से अंग्रेजी में लिखी गई पुस्तक का हिन्दी अनुवाद है जिसे मुहम्मद जैनुलआबिदीन सिद्दीकी ने किया है। परिषद् को आशा है कि इससे अपेक्षित उद्देश्य की पूर्ति होगी।

सं० वि० चंद्रशेखर अय्या

नई दिल्ली — निदेशक

जनवरी, १९७१ — राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

विषय-सूची

पृष्ठ

अध्याय १

यातायात का विकास

प्राचीन मानव

प्राचीन मानव के पास यातायात के कोई साधन नहीं थे। एक से दूसरी जगह जाने के लिए उसके सामने दो ही रास्ते थे—पैदल चलना अथवा दौड़ना। इसके अलावा वह अपने साथ कोई भारी सामान भी नहीं ले जा सकता था। वह केवल उतना ही समान ले जा पाता था, जितना कि उसके हाथों में समा सके अथवा जितना वह अपनी पीठ पर लाद सके। उसे सुदूर इलाकों की यात्रा कर पाना और भारी बोझा ले जाना अवश्य मुश्किल लगता होगा।

लेकिन उसका एक ही जगह हमेशा बना रहना संभव नहीं था। शिकार की तलाश में, जो उसका मुख्य भोजन था, उसे नए स्थानों में जाना ही पड़ता था। न जाने पर भूखों मरने की नौबत आ सकती थी। दुश्मन के हमले के समय जान बचाने के लिए या तो वह लड़ता था, अथवा किसी सुरक्षित जगह शरण लेने के लिए भाग जाता था। समय-समय पर बदलते हुए मौसम ने भी उसे कोई ऐसा शरण स्थल खोजने के लिए मजबूर कर दिया होगा, जहाँ कि वह आराम और खुशहाली के साथ रह सके।

जब कभी और जहाँ कहीं उसे जाना पड़ा, उसको ऊबड़-खाबड़ और जंगली इलाके पार करने पड़ते थे। उसके दिशा निर्देशन के लिए उस समय कोई सड़कें नहीं थीं। नदी और नाले उसकी राहों में रुकावट बनते थे। यदि उसके रास्ते में कोई छिछली नदी आती थी तो वह उसे आसानी से पार कर लेता था, किंतु गहरी व बड़ी नदी के सामने उसको असहाय रह जाना पड़ता था। एक तरफ शत्रुओं का डर और आवश्यकताएँ उसे आगे बढ़ने को मजबूर करती थी, दूसरी तरफ यह रुकावटें उसके उसके दुर्भाग्य का कारण बनती रहती थीं। संभवतः वह नदी पार जाकर अपनी जीवन रक्षा कर सकता था, लेकिन असहाय सा होकर एक तरफ फँस कर रह जाता था। "इधर कुँआ उधर खाई" वाली कहावत जितनी इस मनुष्य पर लागू होती है और किसी पर नहीं।

यह कहा जाता है कि आवश्यकता अविष्कार की जननी है। प्राचीन मानव के सामने ऐसी परिस्थितियाँ आ जाती थीं जिनसे बचने के लिए या तो वह कोई साधन खोजे या मौत के मुँह में समा जाए। शायद यही कारण है जिसने उसमें पुरुषत्व की भावना जागृत की होगी और उसे आज की स्थिति में लाने तक निर्देशित किया होगा।

बेड़े और डोंगियाँ

पानी की सतह पर चलने के लिए मानव ने नदी अथवा पोखर में बहते हुए लकड़ी के लट्ठे या तख्ते से अवश्य प्रेरणा ली होगी। उसने इन पर पक्षियों को बैठे हुए और लट्ठों द्वारा उनका बोझ सँभाला जाना देखा होगा। इसके अलावा उसने इन पर चढ़कर छोटे जानवरों को भी बहते देखा होगा। उसने सोचा होगा कि क्या एक बड़े लट्ठे का अथवा कई छोटे लट्ठों या बेंत के बँडलों को बाँध कर उपयोग नही किया जा सकता ? संभव है यह उसका बोझ ढो सके। जिस क्षण से पहले मानव ने एक लट्ठे या लट्ठे के बेड़े अथवा बेतों के बँडलों का प्रयोग किया, उसी दिन से यातायात के साधन का जन्म माना जाएगा।

यह एक महान आविष्कार था, इससे उसे रास्तों में पड़ने वाले नालों और नदियों को पार करके दूर की यात्रा करने और संभवतः कई बार अपनी जीवन रक्षा करने का अवसर मिल गया होगा। इससे उसे अपनी सबसे गंभीर समस्या यानी खाद्य समस्या भी हल करने में मदद मिली होगी। झील और पोखर चहल-पहल से गूंजने लगे। किनारे खड़े होकर छिछले पानी में वह सिर्फ छोटी मछली ही पकड़ पाता होगा। झील के गहरे पानी में गोता मार कर छिप जाने वाली बड़ी मछलियों को पकड़ने की इच्छा मन में दबाए रहता होगा। लेकिन दुर्भाग्य से वे उसकी पहुंच के बाहर रहती थीं। बेड़ा पुनः उसकी मदद में आया होगा। इससे वह झील में उतर कर अपनी मन पसंद बड़ी मछलियाँ पकने में समर्थ हुआ होगा।

आज भी इस तरह के अनगढ़ बेड़ों का प्रचलन है। मछेरे ऐसे बेड़ बनाकर कई किलोमीटर दूर तक मछली पकड़ने चले जाते हैं।

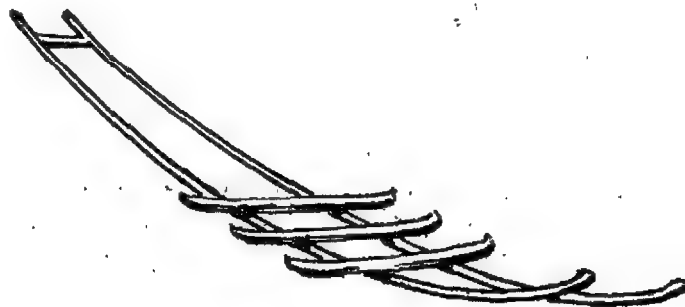
२. डोंगी

पहला बेड़ा संभवतः १५ हजार वर्ष पहले बना होगा। उस समय मनुष्य केवल पत्थर के ही अनगढ़ औजारों का प्रयोग करता था। जैसे-जैसे उसके औजारों में सुधार हुआ, उसने यह अनुभव किया कि वह बड़े पेड़ों की शाखाएँ काट कर नाव के रूप में उनका इस्तेमाल कर सकता है। इन्हें डोंगियाँ कहा जाता है और अवश्य ये बेड़े से अधिक उपयोगी और चलाने में आसान सिद्ध हुई होंगी। इनका उपयोग मानव द्वारा धातु की खोज से बहुत पहले तक होता रहा।

खींचकर ले जाने का साधन या स्लेज

जमीन पर यातायात के साधनों का अविष्कार करना एक दूसरी बात थी।

इसके लिए तीन बातें ध्यान में रखनी होती हैं। ऐसे साधन को दूर तक जाने वाला, तेज चलने वाला और बिना सहायता के मनुष्य जितना बोझ ले जा सके उससे ज्यादा भारी बोझ उठाने की क्षमता वाला होना चाहिए। यह कोई जरूरी नहीं था कि यह तीनों कार्य एक ही साधन द्वारा सम्पन्न हो सकें लेकिन ये ऐसी समस्याएँ थी, जिन्हें उस समय हल किया जाना बहुत आवश्यक था।

उदाहरण के लिए कई व्यक्ति अपने कंधों पर एक बड़ा बाँस लेकर चल सकते थे, जिसमें भारी बोझ लटका हो। इसके अलावा वे काफी दूर तक इस बोझ को ले जा सकते थे जो एक अकेले आदमी के बस की बात नहीं थी लेकिन इन आदमियों की कुल मिलाकर रफ्तार एक अकेले आदमी से ज्यादा नहीं हो सकती। फिलहाल यह एक ऐसी उपलब्धि थी, जिससे भारी बोझों को एक जगह से दूसरी जगह ले जाया जा सकता था।

३. स्लेज

भूमि पर जो सबसे पहला यातातात साधन प्रयोग किया गया, वह खींचकर अथवा सरका कर ले जाने वाली स्लेज थी। इस साधन का सबसे पहले उपयोग दस हजार वर्ष पूर्व हुआ होगा और संभवतः पेड़ की छाल अथवा पशुओं के चमड़े का बना होगा। इसका मतलब सिर्फ यही है कि मनुष्य को अपनी पीठ पर

माल ढोने के बजाय खींच कर ले जाना पड़ता था। जहाँ उबड़-खाबड़ जमीन पड़ती होगी वहाँ तो बोझ खींचने में मनुष्य का दम ही निकल जाता होगा। लेकिन उस समय दुनियाँ में कई ऐसे इलाके भी थे, जहाँ की जमीन पर बर्फ की परतें जमी रहती थीं। ऐसे स्थानों पर स्लेज मनुष्य के लिए वरदान साबित हुई होंगी, यह दूसरी बात है कि उनकी गति मानव से ज्यादा तेज न रही हो।

पशुओं को वश में करना या पशुपालन

भूमि यातायात में वास्तविक विकास उस समय हुआ, जब मानव ने पशुओं को अपने वश में करके उन्हें पालना शुरू किया। सबसे पहले मनुष्य ने अपने सबसे अच्छे साथी कुत्ते को पाला। इसे लगभग दस हजार वर्ष पूर्व पालना शुरू किया गया था और अधिकतर इसका उपयोग शिकार के लिए होता था। करीब छः हजार वर्ष पहले स्लेज गड़ियों में सुधार किया गया और उनका आधार कड़ी लकड़ी के अच्छी तरह सरक सकने वाले तख्ते बनाए गए। पेड़ों के तनों को काट कर उन्हें डोंगियों का रूप देकर स्लेज की तरह इस्तेमाल किया गया। चिकनी सतह वाली लकड़ी आसानी से बर्फ पर फिसल सकती थी।

आज भी शीत प्रदेशों में स्लेज का उपयोग होता है। दक्षिणी ध्रुव के नायक रोनैल्ड एमंडसेन ने १६११ में कुत्तों द्वारा खींची जाने वाली स्लेज गाड़ी द्वारा ध्रुव प्रदेश की यात्रा की थी।

समय बीतने के साथ ही अन्य किस्म के पशु भी पाले जाने लगे। छः हजार वर्ष पहले बकरियाँ और भेड़ें पाली जाती थीं। गदहों का समान ढोने वाले जानवर के रूप में उपयोग सबसे पहले ५ हजार वर्ष पूर्व मध्य-पूर्व में हुआ था। संभवतः इनका प्रयोग सवारियों के लिए भी किया जाता था। आगे चलकर घोड़ों का भी उपयोग होने लगा। अन्य जानवरों का प्रयोग उनकी अधिक मात्रा में उपलब्धि के आधार पर विश्व के विभिन्न भागों में किया जाने लगा था। इन में बैल और हाथी भारत में,

ऊँट अरब में, ध्रुवीय एवं अर्द्ध ध्रुवीय क्षेत्रों में बारहसिंघा, तिब्बत में याक और पेरू में ल्हामा वाहन व यातायात के लिए प्रयुक्त होते थे।

सवारी के लिए आमतौर से घोड़ों का इस्तेमाल किया जाता था। इनमें कुछ चुनी हुई नस्लों को सवारी के लिए और कुछ को माल की ढुलाई के लिए विकसित किया गया। कुछ सदियों पहले तक घोड़ा यातायात का आम साधन था।

चक्के (पहिए) का आविष्कार

४ हजार वर्ष पूर्व हुए पहिए के आविष्कार ने यातायात के क्षेत्र में क्रांति ला दी थी। प्राचीन काल का यह सबसे महत्वपूर्ण आविष्कार था। समय-समय पर चक्कों अथवा पहियों में काफी सुधार किए गए और आधुनिक काल में भी यह जारी है। धरती पर यातायात के लिए प्रयोग में आने वाला सबसे आधुनिक साधन, बिना पहियों के व्यर्थ है।

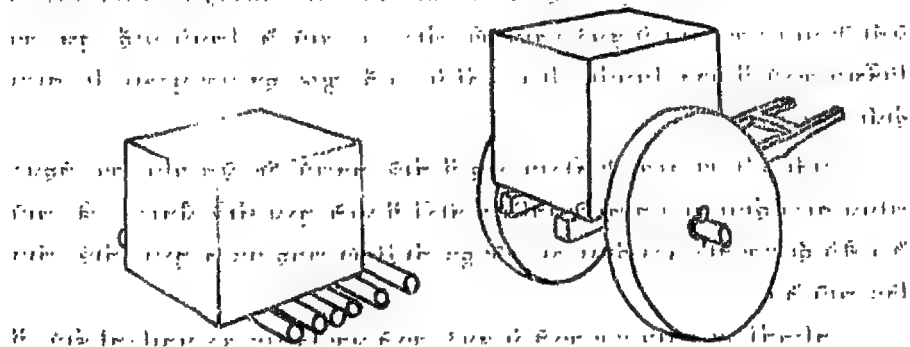
मिस्र के सम्राट खेओप ने करीब पाँच हजार वर्ष पहले अपने लिए एक खूबसूरत मकबरा बनवाया था। यह आज भी विश्व के सात आश्चर्यों में एक माना जाता है। यह काफी विशाल था। इसका आधार २३४ वर्गमीटर चौकोर था और जमीन से इसकी सतह १४७ मीटर ऊँची थी। अपने आकार और शक्ल के कारण इसे महान पिरामिड का नाम दिया गया है।

सबसे आश्चर्य की बात, इस पिरामिड के निर्माण में इस्तेमाल किए गए पत्थरों का आकार है। यह इतने भारी हैं कि प्रत्येक का वजन साठ टन तक है। प्रयोग में लाए गए सभी पत्थरों का कुल वजन सत्तर लाख टन बैठता है। जिस जगह से ये पत्थर लाए गए थे, वह सैकड़ों किलोमीटर दूर थी। इन्हें संभवतः नील नदी के किनारे तक खींच कर लाया गया होगा और बाद में नावों में लाद कर निर्माण स्थल तक पहुँचाया गया होगा। आधुनिक समय में भी, जबकि ऐसे काम के लिए मशीनें मौजूद हैं, इसे एक बड़ी उपलब्धि ही कहा जाएगा। मिस्रवासियों ने चार हजार से ज्यादा वर्ष पहले यह कार्य किस प्रकार किया होगा ?

इसमें कोई शंक नहीं कि इस काम में काफी गुलाम लगाए गए होंगे। लेकिन फिर भी हजारों गुलामों के बस की बात नहीं थी कि पत्थरों को लादा और चल दिए।

ऐसा विश्वास किया जाता है कि पत्थरों को सरकाने के लिए मिस्रियों ने रोलरों का प्रयोग किया होगा। आप सबने देखा होगा किस प्रकार नीचे गोल वस्तुएँ रख कर भारी बोझ को सरकाया जाता है। रोलर दबाव को कम करके आसानी के साथ भारी वजन को आगे खिसकाने में मदद देते हैं। यदि मिस्री पत्थरों को सरकाने में यह तरीका इस्तेमाल कर रहे थे तो अवश्य ही वे रोलरों के उपयोग में कुशल या सिद्धहस्त थे। शायद वे काफी अर्से से रोलरों का प्रयोग करते रहे हों।

देखने में तो ऐसा लगता है कि रोलरों से चक्कों तक आना कुछ ही कदम का फासला तय करना था। लेकिन यह काम इतना आसान नहीं है जैसा कि बाहर से

रोलर तथा चक्के

मालूम देता है। रोलर या घुमावदार चीज जमीन पर रखी जाती है; इसका बोझ से कोई संबंध नहीं होता है। जबकि ठीक इसके विपरीत चक्कों के प्रत्येक जोड़े बीच से एक सीधे डंडे से जुड़े होते हैं, जिसे धुरी कहा जाता है। एक बोझ आगे बढ़ जाने पर रोलर को पीछे छोड़ देता है और हर समय उसके आगे रोलर रखने पड़ते हैं। पहिए कभी पीछे नहीं छूटते हैं बल्कि बोझ के साथ चलते जाते हैं। जिस किसी ने चक्कों

अथवा पहियों का अविष्कार किया है, वास्तव में एक अत्यंत चतुर कारीगर रहा होगा।

पहले चक्के ठोस रहे होंगे और इन्हें मोटे तख्तों से काट कर लगभग गोल आकार दिया गया होगा। समय-समय पर अच्छे औजारों की प्राप्ति होने के साथ ही इनमें सुधार होता रहा और गति में तेजी संभव हो सकी।

पहिए के आविष्कार के बाद से कई तरह की गाड़ियाँ, वैगन, बग्घियाँ और रथ खोज निकाले गए। प्रत्येक अपनी आवश्यकता के अनुकूल था। भारी गाड़ियों और वैगनों का इस्तेमाल माल के लाने और ले जाने में किया जाता था। सवारियों के लिए बग्घियों का उपयोग होता था, जो हल्की और अच्छी बनी होती थीं। छोटे वाहनों में दो पहिए और बड़े में दो जोड़े या इससे ज्यादा पहिए होते थे।

रथों का इस्तेमाल युद्ध में होता था। ताकतवर घोड़े महत्वपूर्ण सेनापतियों को तेजी के साथ एक स्थान से दूसरे स्थान की ओर ले जाते थे, जिससे उन्हें युद्ध का निर्देशन करने में मदद मिलती थी। रथों से उन्हें कुछ हद तक सुरक्षा भी प्राप्त होती थी।

लंबी दूरी की यात्रा के दौरान राह में घोड़े बदलने से तेज गति का बेहतर औसत प्राप्त होता था। यात्रा के विभिन्न दौरों में ताजे चुस्त घोड़े तैयार रखे जाते थे। जैसे ही एक दौर पूरा होता था, थके हुए घोड़ों की जगह नए व चुस्त घोड़े जोत दिए जाते थे।

बग्घियों का प्रयोग एक कस्बे से दूसरे कस्बे तक किराए पर सवारियाँ ढोने में भी होता था। जो लोग खुद अपने वाहन नहीं रख सकते थे वे किराए के वाहनों का लाभ उठाते थे। इंगलैंड में इन्हें स्टेज कोचेज के नाम से पुकारा जाता था और इनका प्रचलन अठारहवीं सदी में हुआ। इसी तरह के वाहनों की सेवा लंदन शहर की सड़कों पर भी उपलब्ध थी। इनके मालिक अपनी बग्घियों को ओमनीबस कहते थे। यह एक लैटिन शब्द है जिसका अर्थ सबके लिए होता है। हम इस समय भी मुसाफिर ले जाने वाले वाहन को बस कहकर पुकारते हैं, जो ओमनीबस का छोटा शब्द है।

अज्ञात समुद्र की चुनौती

जैसा कि ऊपर बताया जा चुका है भूमि पर प्रयुक्त होने वाले यातायात के साधनों का विकास तो होता रहा किंतु समुद्र की किसी प्रकार की भी उपेक्षा नहीं की गई थी। बेड़े और अनगढ़ डोंगियाँ शीघ्र ही पुराने जमाने की चीजें बन गईं अथवा इनका इस्तेमाल धरती के सुदूर इलाकों में रहने वाले असभ्य व जंगली लोगों के लिए छोड़ दिया गया।

हमने यह देखा है कि किस तरह मिस्रवासी बड़ी तादाद में भारी और विशाल पत्थर सैकड़ों किलोमीटर की दूरी तय करके नील नदी के जरिए लाए थे। वे ऐसा नहीं कर सकते थे अगर उनके पास मजबूत नावें और उनके संचालन की दक्षता न होती।

समय बीतने के साथ ही विभिन्न आकार और प्रकार की नावें व अन्य यान बनते गए। छिछले पानी में सबसे हल्की नावें लंबे बाँसों के जरिए खेई जाने लगीं और गहरे समुद्र में नौसंचालन के लिए पतवारों का प्रयोग होने लगा।

मिस्रियों ने सबसे पहले पतवारों का इस्तेमाल किया। भूमि पर चलने वाले यानों के लिए जो महत्व पहियों का है, वही जलयानों के लिए पतवारों का है। इनसे जलयान की गति और क्षेत्र का विस्तार होता है और करीब डेढ़ सौ वर्ष पहले तक यह उपयोग में आते रहे हैं। यहाँ तक कि जब भाप का प्रयोग होने लगा, तब भी कुछ अर्से के लिए ये काम में लाए जाते रहे और जब लोगों को यह पूरा भरोसा हो गया कि भाप उन्हें रास्ते में धोखा नहीं देगी, तब इनका उपयोग बंद कर दिया गया। पहले के जहाजों में तेज गति के लिए दोनों किनारों पर पतवारों की लंबी कतारें लगाई जाती थीं। रडारों के जरिये उन्हें अपनी दिशा में बनाए रखा जाता था।

समय गुजरने के साथ ही सुधारों सहित बड़े से बड़े आकार के जहाज़ बनने लगे। बाद के जहाजों के मुकाबले यह जहाज कमजोर थे। हम पहले के नाविकों के साहस की सराहना किए बिना नहीं रह सकते हैं, जो अज्ञात समुद्र में इनके द्वारा यात्रा करने की हिम्मत करते थे।

इन साहसी नाविकों में सबसे पुराने फिनीशियाई लोग थे। ईसा से करीब एक हजार वर्ष पहले इन लोगों ने भूमध्य सागर की यात्राएँ की थीं। ईसा से करीब छः सौ वर्ष पहले तत्कालीन मिस्री सम्राट् ने इन नाविकों को अफ़्रीका के सागर तटों का चक्कर लगाने को भेजा था। ऐसा मालूम होता है कि इन लोगों ने यह कार्य कर दिखाया था, लेकिन मिस्र का सम्राट् उनकी कहानी पर विश्वास करने को तैयार नहीं हुआ। यह लोग उत्तर में आइसलैंड तक गए थे।

फिनीशियाई लोगों के बाद रोम के लोगों ने नए स्थानों की खोज और भूमध्य-सागर के तटीय क्षेत्रों में अपने उपनिवेशों की स्थापना का कार्य जारी रखा। इनके जहाज गैली कहलाते थे, जिनमें दोनों किनारों पर पूरे आकार की पतवारों को लंबी कतारें विभिन्न परतों में बिछी रहती थीं। जहाज की पूरी लबाई के बराबर भीत की ओर दोनों तरफ बेंचें बनी रहती थीं जिन पर जंजीरों में जकड़े हुए गुलाम बैठे रहते थे, और पतवारों को चला कर जहाज़ खेते थे। जलयान चलाने वाले यह गुलाम कैदी अथवा युद्धबंदी होते थे। लंबे कोड़ों से लैस निरीक्षक इन्हें जहाज़ की गति तेज रखने को मजबूर करते रहते थे। यदि कोई गुलाम अपने स्थान पर बैठे हुए मर जाता था तो उसकी जगह दूसरा गुलाम ले लेता था। रोम के जहाज़ों के पास जहाजों की यात्रा जारी रखने के लिए अवश्य ही गुलामों की एक बड़ी तादाद रहती होगी। एक तरफ तो इन जहाज़ों पर नाच-गाने और दावतें होती रहती थीं, दूसरी तरफ पतवारों के पास गुलाम बेहोश होते रहते थे अथवा मर जाते थे। जब जहाज़ की चाल तेज़ होती थी, तो धनी सरदार दावतों और यात्रा का और ज्यादा मजा लेते थे।

वाईकिंग लोग तो बहुत ही दिलेर थे और उत्तरी समुद्रों में इनके जहाजों का आतंक व्याप्त था। उत्तरी यूरोप से वे लोग प्रेरित होकर वहाँ बस गए। यहाँ तक कि वे ग्रीनलैंड से दक्षिण की ओर भी गए और उनके जहाज़ उत्तरी अमरीका के किनारों तक जा पहुँचे थे। इस प्रकार कोलंबस से पाँच सौ वर्ष पूर्व नई दुनिया की खोज करने वाले ये सबसे पहले लोग थे।

वाईकिंग लोगों के जहाज़ ड्रैगन के आकार के बनाए जाते थे। प्रत्येक जहाज़ में

एक पाल और दोनों तरफ करीब सोलह-सौलह पतवारें होती थीं। वाईकिंग बहुत भीषण योद्धा थे और जहाँ कहीं भी वे जाते थे, लोगों में भय की लहर दौड़ जाती थी।

फिनीशियाई और वाइकिंग लोगों द्वारा इतना जोखिम उठा कर जो खोजें की गईं वे स्थाई मूल्य की नहीं थीं। फिनीशियाई लोगों ने भूमध्य सागर से आगे कोई उपनिवेश नहीं कायम किए थे। वैसे वाईकिंग ने ग्रीनलैंड में अपनी बस्ती कायम की तो थी, लेकिन वह ज्यादा दिनों तक नहीं रह सकी। वे लोग नई दुनिया के किसी भी इलाके में नहीं बस सके अतएव इनका कार्य दुनिया के गर्त में समा गया, और लोग जल्दी ही उसे भुला बैठे।

इनसे ज्यादा आश्चर्यजनक करतब पोलीनेशियन ने और माइक्रोनेशियन लोगों ने कर दिखाए थे। पोलेनेशिया और माक्रोनेशिया प्रशांत महासागर में द्वीपों के समूह हैं। इन लोगों के पास जहाज नहीं थे। इन्होंने प्राचीन डोंगियों द्वारा भयानक प्रशांत महासागर में यात्राएँ कीं। यह समुद्र उनके लिए एक खुली किताब की तरह था और इन्होंने हजारों मील अज्ञात समुद्रों व इनसे भी ज्यादा अज्ञात द्वीपों की यात्राएँ की थीं।

पूर्व में, दक्षिण अफ़्रीका होकर यूरोपीय लोगों द्वारा समुद्री मार्ग खोले जाने से पहले, अफ़्रीका, अरब, भारत और अन्य देशों के तटों से खूब व्यापार होता था।

भारतीय नाविक बंगाल से अपनी यात्रा शुरू करते थे और बर्मा व ईस्टइंडीज और इससे भी आगे तक जाते थे। भारतीय इनमें से कुछ क्षेत्रों में बस भी गए और अपने साथ अपना धर्म व सांस्कृतिक धरोहर भी ले गए थे।

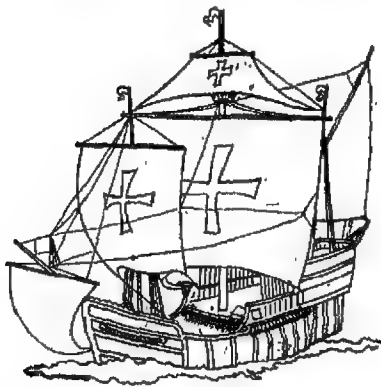
अरब भी साहसी व्यापारी थे। वे अफ़्रीका के पूर्वी किनारे से होते हुए मिस्र व अन्य स्थानों तक पहुँचते थे। इन लोगों का भारत और ईस्टइंडीज में भी व्यापार होता था। इनमें से कुछ मालाबार व अन्य स्थानों पर बस गए थे।

नई भूमि व समुद्रों के खोजी

ईसा के बाद चौदहवीं सदी तक यूरोप, एशिया और अफ़्रीकी समुद्र तट के थोड़े

से इलाके के पार की दुनिया के बारे में बहुत कम जानकारी थी। बाकी संसार, उसके द्वीप और समुद्र एक अज्ञात रहस्य से थे।

चौदहवीं और पंद्रहवीं सदी के दौरान यूरोप में एक नए जीवन का संचार हुआ। लोग जीवन के हर क्षेत्र में एक नयापन खोजने की कोशिशों में लगे हुए थे। जमीन के रास्ते पूर्व की यात्रा करके वापस आए व्यापारी लोग भारत, चीन और ईस्टइंडीज की संपदा के बढ़ा-चढ़ा कर विवरण देते थे। यूरोपीय राष्ट्र समुद्री रास्तों की खोज के लिए बेचैन हो उठे, जिससे कि इन क्षेत्रों की संपदा तक उनको पहुँच हो सके।

साहसी नाविकों ने इस चुनौती को स्वीकार किया। यूरोप की उस जमाने की सबसे अग्रणी समुद्री ताकत पुर्तगाल ने बार्थोलोम्यू दियाज को भेजा। वह अफ्रीका के पश्चिमी किनारे का चक्कर लगा कर १४८८ में आशा अंतरीप तक ही पहुँच पाया और उसके आगे नहीं जा सका।

५. कोलंबस का सांता मारिया नामक १०० टन वाला जहाज

दियाज द्वारा शुरू किए गए कार्य को वास्को द गामा ने पूरा किया। वह ८ जुलाई, १४९७ को चार छोटे जहाजों के साथ पुर्तगाल की राजधानी लिस्बन से रवाना हुआ। रास्ते में उसके नाविक बीमार पड़ गए और काफी थके हुए थे। वे अपने घर वापिस जाने को बेचैन हो गए थे, लेकिन वास्को द गामा उन्हें आगे बढ़ाता ले गया और अंत में मई १४९८ में कालीकट के तट पर पहुँचा।

वह अपनी यात्रा की शुरुआत के दो वर्ष बाद सितंबर, १४९९ में लिस्बन वापिस पहुँचा था। उसने और उसके साथी नाविकों ने काफी मुसीबतें झेली थीं, लेकिन

उन्होंने वह रास्ता खोज ही निकाला जिसके लिए वे रवाना हुए थे ।

कोलंबस एक और साहसी पुर्तगाली था, जो पूर्व के लिए दूसरा समुद्री रास्ता खोजना चाहता था । उसका इरादा यूरोप से पश्चिम दिशा की ओर यात्रा करने और दुनिया का चक्कर लगाते हुए एशिया तक पहुँचने का था । उसका अनुमान था कि उसे अपनी मंजिल तक पहुँचने के लिए करीब पाँच हजार किलोमीटर की यात्रा करनी पड़ेगी ।

पुर्तगाल के सम्राट् नें उसके साथ अच्छा व्यवहार नहीं किया, अतएव वह स्पेन चला गया । कुछ समय के बाद स्पेन के सम्राट् ने उसे उसकी इच्छानुसार जहाज़ और नाविक प्रदान कर दिए । अगस्त, १४९२ को कोलंबस अपने सांता मारिया, नीना और पिंटा नामक तीन छोटे जहाजों के साथ यात्रा पर रवाना हुआ ।

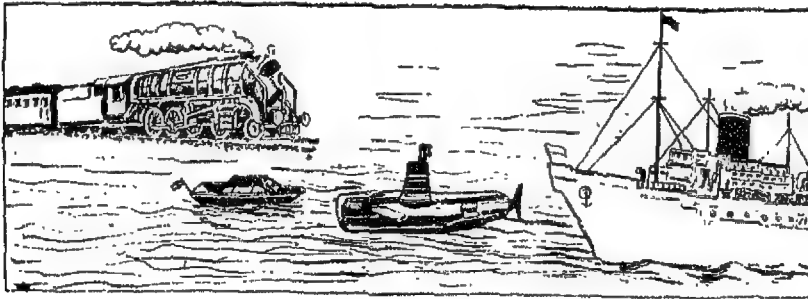
वह एशिया तक नहीं पहुँच पाया, जैसी कि वह उम्मीद लेकर चला था । उसके सामने अमरीकी महाद्वीप था, हालाँकि तब उसका कोई नाम तक नहीं जानता था । कोलंबस ने १२ अक्तूबर, १४९२ को भूमि के दर्शन किए । बाद में वह मुख्य अमरीकी भूमि के निकट का एक द्वीप निकला । उसने उसे सैन सालवादोर नाम दिया । इस प्रकार एक नई दुनिया खोज निकाली गई ।

कोलंबस पूर्व के लिए जो नया रास्ता खोजने चला था, वह अब तक अज्ञात था । अतएव स्पेन के सम्राट् ने मैगेलन को यह काम सौंपा । १५१९ में मैगेलन अपनी प्रसिद्ध विश्वव्यापी यात्रा पर रवाना हुआ । उसके साथ सैनअंतोनियो, ट्रिनिडाड, कानसेम्पशन, विक्टोरिया और सान्तियोगो नामक पाँच जहाज थे ।

मैगेलन दक्षिण अमरीका तक पहुँच गया और दक्षिण की ओर उसने तब तक यात्रा जारी रखी जब तक कि उसने सँकरा जलमार्ग पार नहीं कर लिया, जिसका कि नामकरण उसके नाम पर हुआ है । वहाँ से वह प्रशांत महासागर में प्रविष्ट हुआ और उसको वर्तमान नाम दिया ।

उसके ज्यादातर नाविक और कप्तान उसके विरुद्ध हो गए थे । वे लोग काफी थके हुए थे और आगे जाने से घबराते थे । लेकिन मैगेलन ने उनके साथ कठोरता बरती

और आगे बढ़ता ही गया। इनके सामने खाने का ऐसा अकाल पड़ गया कि चमड़े और लकड़ी के बुरादे से ही गुजारा करना पड़ा।

मैगेलन एक द्वीप के आदिवासियों के साथ हुए संघर्ष में मारा गया। उसके नाविकों ने अपनी यात्रा जारी रखी और २ सितंबर, १५२२ को, अर्थात् ठीक तीन वर्ष बाद पुनः स्पेन की धरती पर पाँव रखा। स्पेन से तीन वर्ष पूर्व रवाना हुए पाँच जहाजों और २३४ नाविकों में से केवल एक जहाज और १८ नाविक ही वापस आ सके।

अध्याय २

भाप का इंजन और जलयान

भाप पर नियंत्रण

तुमने यह कहानी तो सुनी होगी कि किस तरह वाट्स ने एक दिन नाश्ते की मेज पर भाप के कारण उठते-गिरते एक केटली के ढक्कन को देखा और उसके दिमाग में भाप के इंजन के अविष्कार का विचार आया। लेकिन सचाई यह है कि वाट्स के जन्म से भी पहले कोयला खानों से पंप द्वारा पानी बाहर निकालने के लिए भाप की शक्ति का उपयोग होता था। वाट्स ने केवल उस समय प्रचलित इंजनों में सुधार भर किए थे।

ईसा से करीब १२० वर्ष पहले अलेक्जेंड्रिया के हेरो नामक व्यक्ति ने एक ऐसा तरीका निकाला जिससे कि भाप को काम में लाया जा सके। उसने धातु का एक खोखला गोला लिया, जिसमें दो टोंटियाँ लगी हुई थीं। यह गोला अथवा गेंद दो आधारों पर रखी हुई थी और इन आधारों के कोने एक ओर को मुड़े हुए थे। यह आधार अपने मुड़े हुए कोनों पर गोले को विपरीत दिशा में इस तरह उठाए हुए थे

कि गोला इन्हें जोड़ने वाली धुरी पर घूम सकता था। इनमें से एक आधार अथवा छड़ खोखला था, जो कि नीचे रखी एक छोटी सी भट्टी से जुड़ा हुआ था।

खोखले आधार के जरिए भट्टी से भाप गोले में पहुँचाई जाती थी। जैसे ही टोंटियों में भाप निकलना शुरू हुआ कि उसकी प्रतिक्रिया से गोला या गेंद विपरीत दिशा में घूमने लगता था। आपने देखा होगा कि कैसे इसी प्रकार लान पर छिड़काव करने वाले बर्तन की नली, पानी निकालने वाले छेदों अथवा टोंटियों की विपरीत दिशा में मुड़ी होती है।

७. हेरो का भाप का इंजन

इस मामूली क्रिया से हेरो ने भाप की गर्मी से गति पैदा की थी। ठीक यही काम भाप का इंजन करता है। लेकिन हेरो ने इस अविष्कार का उपयोग केवल जादू के खिलौने बनाने में ही किया। इसे व्यवहार में नहीं लाया गया।

सत्रहवीं सदी तक किसी ने भी शक्ति के इस स्पष्ट स्रोत के उपयोग की बात नहीं सोची थी। १६९३ में टामस सेवरी ने भाप के एक पंप का अविष्कार किया। यह पानी ऊपर उठाने से भाप के द्रव में बदल जाने से उत्पन्न वैकुअम की शक्ति से चलता था। इसके कुछ वर्ष बाद टामस न्यूकोमेन ने एक ऐसा पंप बनाया जिसमें पिस्टन और सिलैंडर की व्यवस्था की गई थी। यह एक भारी और अनगढ़ पंप था किंतु करीब डेढ़ सौ वर्षों तक इसका प्रचलन रहा।

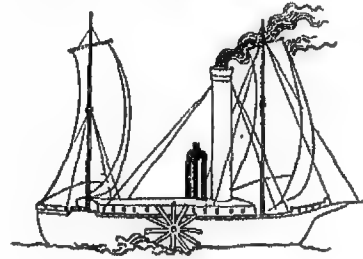
इस काल के अविष्कारकर्त्ताओं के सामने भारी कठिनाइयाँ अच्छे औजारों की कमी के कारण थीं। क्योंकि इनके बिना वे लोग अपने विचारों को वास्तविक रूप नहीं दे पाते थे। इस जमाने में अच्छी तरह के एक पिस्टन अथवा सिलैंडर को ढाल पाना मुश्किल काम था। कारीगर भी कुशल नहीं थे। इसी अकुशल कारीगरी के कारण १७७६ में फ्रांस में बनी वाष्पचालित नाव असफल रह गई।

फिलहाल, १७६९ में जेम्स वाट्स ने अपने भाप के इंजन को सुधारा और पेटेंट कराके प्रस्तुत किया। कई लोगों ने इसका उपयोग नौकाचालन के लिए किया किंतु ज्यादा सफलता नहीं मिली। १८०७ में राबर्ट फुल्टन नामक एक अमरीकी वाष्प-चालित नाव बनाने में सफल रहा और यह नाव मुसाफिर ले जाने में समर्थ थी।

फुल्टन की क्लेरमोन्ट नामक नाव करीब ४० मीटर लंबी और ६ मीटर चौड़ी थी और वह १६० टन भार ढो सकती थी। इसमें प्रयुक्त होने वाला भाप का इंजन इंग्लैंड का बना हुआ था। यह नाव के दोनों तरफ लगे दो चक्कों को संचालित करता था।

अपनी परीक्षण यात्रा में क्लेरमोन्ट ने २४० किलोमीटर की दूरी ३२ घंटों में पूरी की थीं। कुछ समय बाद इसके द्वारा मुसाफिरों को ले जाने की नियमित सेवा शुरू हो गई। इसी के साथ ही वाष्प यातायात प्रारंभ हुआ।

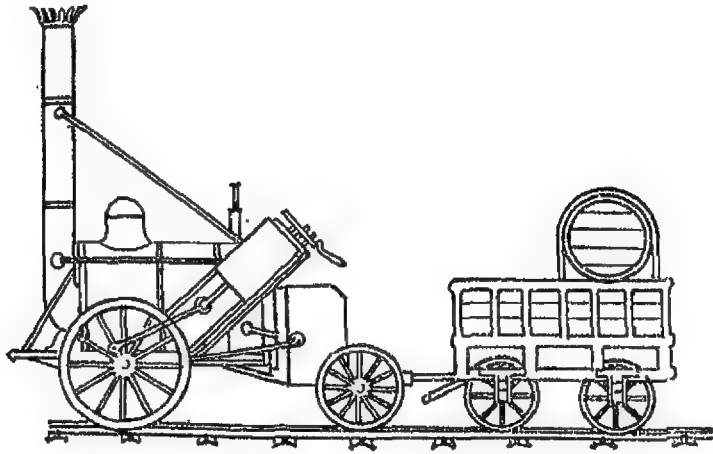
८. फुल्टन की क्लेरमोन्ट नामक नाव

शीघ्र ही और नावों ने भाप चालित इंजनों का इस्तेमाल शुरू कर दिया। लेकिन लोगों को उस समय भाप की शक्ति पर पूरा भरोसा नहीं हुआ था। इसीलिए काफी अर्से तक जलयानों में भाप संचालित इजनों का इस्तेमाल सहायक के रूप में होता रहा।

लेकिन अनुभव ने यह साबित कर दिया कि पालदार जलयानों, जो कि निर्शचित हवाओं की दया पर निर्भर रहते हैं, की बजाय वाष्प चालित जहाज नियमित और निश्चित सेवा दे सकते हैं। जैसे-जैसे यह विश्वास जमता गया, भारी और ज्यादा ताकत वाले जहाज बनने लगे।

रेल के इंजन का जन्म

इधर जहाजों और नावों में सुधार हो रहे थे, उधर भूमि पर यातायात के लिए भाप की शक्ति के उपयोग की दिशा में भी तेजी से कार्य हो रहा था।

रिचार्ड ट्रेविथिक ने सबसे पहले भाप चालित रेल का इंजन बनाया। १५ फरवरी, १८०४ को इसे साउथ वेल्स की एक खान की ट्राम की पटरियों पर चलाया गया। यह १० टन लोहे की एक गाड़ी और ७० लोगों को करीब १५ किलोमीटर की दूरी तक ले गया। शुरू में यह प्रदर्शन खराब नहीं था, लेकिन खान के मालिक इससे बहुत नाराज हो गए। यह इंजन इतना भारी था कि इससे ट्राम की कमजोर पटरियाँ टूट गई थीं। इस हालत में इंजन को और सुधारने का इरादा छोड़ दिया गया।

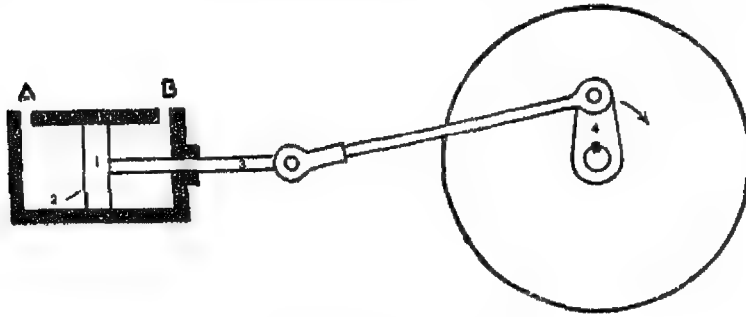
फिर भी, कई इंजीनियर और आविष्कारक इस दिशा में आने वाली समस्याओं को सुलझाने की कोशिशों में लगे रहे। स्टीफेन्सन व अन्य लोगों ने इन समस्याओं के निदान प्रस्तुत किए। लेकिन १८२९ में हुई प्रतियोगिता जार्ज स्टीफेन्सन के राकेट नामक इंजन ने जीतकर अपनी उपयोगिता और कीमत सिद्ध कर दी। पहला वाष्प

९. स्टीफेन्सन का राकेट नामक भाप का इंजन

चालित इंजन रेलमार्ग १८३० में मैनचैस्टर से लिवरपूल तक बना। वाष्प इंजन की ख्याति तेजी के साथ बढ़ने लगी। प्रत्येक देश ने अपने यहाँ रेलों का निर्माण शुरू कर

दिया। एक सदी के भीतर संसार के विभिन्न देशों में हजारों किलोमीटर रेलमार्ग बन गए हैं। भारत में १८४९ के दौरान परीक्षणात्मक रूप में बने तीन रेलमार्गों से शुरूआत हुई थी।

वाष्प इंजन के सिद्धांत

जैसा कि बताया जा चुका है, वाष्प अथवा भाप का इंजन जलते हुए कोयले की ताप शक्ति को गति की शक्ति में बदलता है। मुख्य रूप से इसमें पिस्टनयुक्त धातु का एक मजबूत सिलिंडर या बेलन लगा होता है। पिस्टन बेलन के भीतर बाहर चलता रहता है लेकिन भाप को बाहर नहीं निकलने देता है। बेलन या सिलिंडर दोनों तरफ से बंद रहता है।

भाप एक अन्य स्थान पर तैयार की जाती है, जिसे ब्वायलर अथवा भट्टी कहते हैं। इसे भारी तापमान द्वारा गर्म किया जाता है। इसे सिलिंडर के पहले छोर

१०. वाष्प इंजन का सिद्धान्त

१. पिस्टन ३. पिस्टन रौड
२. सिलिंडर ४. क्रैंक (गोलाकार भाग)

(ए) द्वारा प्रविष्ट कराया जाता है और जैसे ही भाप का दबाव बढ़ता है वह पिस्टन को बेलन या सिलिंडर के दूसरे छोर (बी) की ओर धक्का देता है। फिर दूसरे छोर से

पिस्टन को पहले छोर की ओर धक्का दिया जाता है। इंजन में वाल्व पद्धति की व्यवस्था रहती है, जो उचित समय पर अपने आप भाप को आने देता है अथवा रोक सकता है। जैसे-जैसे धक्कों की रफ्तार बढ़ती जाती है, वैसे-वैसे पिस्टन भी सिलिंडर में तेजी के साथ आगे-पीछे चलता है।

अगली समस्या पिस्टन को आगे-पीछे होने की इस प्रक्रिया को चक्करदार गति देने की है जिससे कि इंजन के पहिए घूम सकें। पिस्टन से जुड़ा हुआ एक धुरा बेलन के दूसरे छोर के मध्य से गुजरता है। यह धुरा एक गोलाकार भाग के किनारे पर लगे लिवर के समूह से संबद्ध रहता है। गोलाकार भाग पहिए के ऊपर होता है। चित्र संख्या १० हमें यह बताता है कि किस तरह पिस्टन के आगे-पीछे होने से गोलाकार भाग घूमता रहता है।

भाप चालित इंजनों का आविष्कार होने के बाद से ही यह पाया गया कि ऐसे इंजन चिकनी पटरियों पर अच्छी तरह दौड़ सकते हैं। पहले के इंजनों में जरा सी गड़बड़ी या तो उनकी गति कम कर देती थी अथवा बिलकुल बंद कर देती थी। कई परीक्षणों के बाद मौजूदा तरीकों की पटरियाँ प्रयोग में लायी जा रही हैं। इन पटरियों को लकड़ी अथवा धातु के पटरों पर बिछाया जाता है। पटरी को मजबूती से जमाए रखने के लिए पत्थरों के टुकड़े पटरों के नीचे और अगल-बगल डाले जाते हैं। पत्थरों के टुकड़ों से जकड़े पटरों का प्रबंध पटरी को हल्का-सा लचीलापन दे देता है, जिससे कम धक्के महसूस होते हैं।

इंजन की प्रगति

जैसे-जैसे लोकप्रियता बढ़ती गई, रेल गाड़ियाँ यात्रियों और माल की ढुलाई के लिए एक प्रमुख यातायात का साधन बनती गई। प्रत्येक कारखाने की अपनी स्वयं की अपनी रेलवे साइडिंग होती है जिससे उनके ही यार्ड में सामान चढ़ाने-उतारने का काम हो सके।

समय के साथ ही इंजनों का आकार और शक्ति भी बदलती गई। आज ३०

मी टरसे भी ज्यादा और लंबे और विशालकाय इंजन दौड़ रहे हैं। ३७५० किलोवाट तक की भारी शक्ति वाले यह इंजन प्रत्येक छः किलोमीटर पर एक टन कोयला पचा जाते हैं। महत्वपूर्ण मार्गों पर रेलगाड़ियाँ सैकड़ों किलोमीटर अवाध गति से चल रही हैं। रास्ते में इंजन पानी लेता चलता है। भाप के इंजन ने हमारी काफी अर्से से और बेहतर सेवाएँ की हैं। भाप के इंजन की एक कमी यह है कि वह बहुत गहरा धुआँ छोड़ता है। इससे घने बसे क्षेत्रों की हवा दूषित होती है और जनता के स्वास्थ्य पर बुरा असर पड़ता है। जितना कोयला खर्च होता है, उसकी शक्ति का थोड़ा सा ही अंश इंजन के प्रयोग में आ पाता है। अनुमान है कि ऐसे इंजन के तेरह प्रतिशत शक्ति का ही इस्तेमाल कर पाते हैं, जबकि तेल से चलने वाले इंजन, जिनका कि विवरण आगे दिया जायगा अपने ईंधन की उत्पादित शक्ति का उन्तालीस प्रतिशत भाग प्रयोग में लाते हैं। भाप के इंजनों के यातायात का बड़ा भाग अब हवाई जहाजों और मोटरों की ओर खिचता चला जा रहा है। कई स्थानों पर कोयले की पूर्ति भी घटती जा रही है।

जैसे-जैसे यातायात बढ़ता गया, ज्यादा-से-ज्यादा रेलवे मार्ग बनते गए। शहरी क्षेत्रों में इन नई लाइनों के लिए जमीन प्राप्त करना मुश्किल हो गया। ऐसे मामले में जमीन के भीतर रेल लाइनें बिछानी पड़ीं। मिसाल के तौर पर लन्दन को १८६३ में ही भूमिगत रेल व्यवस्था करनी पड़ी। लेकिन जिन सुरंगों से होकर यह रेलें गुजरती थीं, वहाँ इनके इंजनों द्वारा छोड़े गए भारी धुएँ के कारण दम घुटने वाला वातावरण पैदा हो गया। दूषित वायु निकालने और अच्छी वायु प्रविष्ट कराने की समस्या गम्भीर हो गई। इस कारण १८८४ में इन रेल पथों का आगे विस्तार रोक दिया गया।

इस बीच बिजली का उपयोग तेजी से तरक्की पर था। इसने भाप शक्ति का एक बेहतरीन विकल्प प्रस्तुत किया। १८९० में विश्व की सबसे पहली बिजली की रेल चलाई गई। अगले बीस वर्षों के भीतर इसका तेजी से विस्तार हुआ। इस समय १४२ किलोमीटर भूगर्भीय रेलपथ लंदन में है, जिनमें से १०८ किलोमीटर सुरंगों से होकर गुजरते हैं।

समुद्र विजय

अतलांतक महासागर को पार करने वाला सबसे पहला स्टीमर सावन्नाह था। यह अमरीकी स्टीमर १८१६ में अतलांतक सागर से गुजरा था। सन् १८३८ से पालों का उपयोग बंद हुआ और वाष्प चालित पहला स्टीमर सिरिअए अतलांतक से गुजरा। १८३६ में ग्रेट ब्रिटेन नामक जहाज अतांलतक में चलने वाला पहला वाष्प चालित जहाज़ था, जिसमें पानी काटने के चक्के की जगह पेचों का इस्तेमाल किया गया।

जहाज़ों के आकार बढ़ने के साथ ही उनके ढाँचे लकड़ी की बजाय लोहे के बनने लगे। लोहे का पहला जहाज ग्रेट ब्रिटेन में १८४८ में बना।

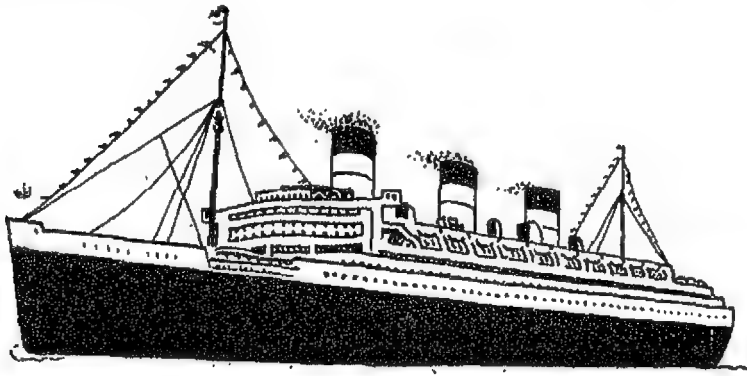
जल और थल के नए मार्गों की खोज ने व्यापार की नई दिशाएँ खोल दीं। योरोप की बड़ी समुद्री शक्तियों में व्यापार की होड़ लग गई और कभी-कभी तो उनके बीच भयानक समुद्री लड़ाइयाँ छिड़ जाती थीं। इसके कारण शक्तिशाली नौसेनाओं का जन्म हुआ। बारूद के अविष्कार के साथ ही बड़ी और अच्छीं तोपें भी बनने लगीं। भारी तोपों से लैस युद्धपोत भयानक विनाशकारी शक्ति रखता था।

यूरोपीय देशों ने जल्दी ही यह अनुभव किया कि उनकी नौसेनाओं से उन्हें भारी लाभ है। एशियाई देशों के हथियार घटिया किस्म के थे। नई दुनियाँ के मूल निवासियों के हथियार प्राचीन युग के थे। अतएव अच्छे व घातक हथियारों से लैस यूरोपीय देश जहाँ चाहते वहाँ बड़े इलाकों पर कब्जा कर लेते थे और अपने उपनिवेश बना लेते थे। इन उपनिवेशों और साम्राज्यों की संपदा यूरोप की बड़ी शक्तियों के पास भारी माला में सिमटने लगी और उन्हे और बड़े व बेहतर जहाज़ बनाने में काफी मदद मिली।

'सैनिक उपयोग के अलावा व्यापारिक उद्देश्यों के लिए भी जलयानों का विकास किया गया। माल वाहक जहाज माल ढोते थे। समय के साथ ही यात्रीवाहक जहाज़ों का आकार और आराम की सुविधाएँ भी बढ़ने लगीं।

निश्चित मार्ग अथवा दिशा की ओर जाने वाले जहाजों को लाइनर की संज्ञा दी गई। किसी निश्चित मार्ग को न अपनाने वाले जहाजों को ट्रैम्प (घुमंतू) कहा जाता था। लेकिन जब संपन्न व्यक्ति समुद्र की यात्रा का मजा लूटने की इच्छा करते थे, तो निश्चित मार्गों पर चलने वाले जहाज उनके लिए उपलब्ध किए जाते थे। आजकल लाइनर शब्द एक बड़े और अत्यन्त आरामदेह जहाज को कहते हैं।

तैरते हुए नगर

सबसे बड़े लाइनर जहाज़ एक छोटे तैरते हुए नगर होते हैं। क्वीन मेरी नामक सबसे बड़ा जहाज अतलांतक महासागर में चलता था। इस जहाज का संक्षिप्त विवरण उन दिशाओं का परिचय दे देगा, जिनके आधार पर जहाजरानी का विकास हुआ है। क्वीन मेरी सन् १९३६ में प्रकाश में आया। यह जहाज ३११ मीटर लंबा और ३६ मीटर चौड़ा था। इसका वजन लगभग ८० हजार ७७४ टन था। इसमें ९ डेक और ५ सौ प्रथम श्रेणी के कमरे थे। इसमें दो हजार यात्री बैठ सकते थे। इसके कर्मचारियों की संख्या एक हजार थी। रहने के स्थान के अलावा जहाज में भोजन के

११. क्वीन मेरी नामक जहाज

हाल, धुम्रपान के कमरे, वाचनालय, पुस्तकालय, बालरूम नृत्य के हाल, स्टूडियो, नर्सरी, तैराकी के तालाब, टेनिस कोर्ट, व्यायामशाला, स्नानागार, सिनेमाघर, प्रसाधनगृह और दुकानें थीं।

यात्रियों की सभी जरूरतों के बारे में पहले ही सोच लिया जाता था और वे पूरी की जाती थीं। प्रत्येक प्रथम श्रेणी के कमरे में एक टेलीफोन लगा हुआ था। सौ रसोइए मनपसंद भोजन तैयार करते थे। पाँच दिनों की इकतरफा यात्रा के लिए जो सामग्री रखी जाती थी उनमें से कुछ का विवरण इस प्रकार है—

गोश्त २० टन, मछली २० टन, अंडे ७ हजार, चाय और काफी दो हजार किलोग्राम, शकर ५ हजार किलोग्राम, आलू ३० टन, दूध दो हजार लिटर, सब्जियाँ २० हजार किलोग्राम, मक्खन ३ टन, पनीर १ हजार किलोग्राम, सेब और नरंगिया ६ सौ बक्से, मुर्गे और बतखें चार हजार, शराब दस हजार बोतलें, बियर चालीस हजार बोतलें और खनिज जल ६० हजार बोतलें।

इतनी विशाल खाद्य सामग्री रखते हुए भला कोई भूखा रह सकता था।

अन्य वस्तुएँ भी विशाल मात्रा में थीं। जहाज में चीनी मिट्टी और शीशे के एक लाख बर्तन, २६ हजार काँटे, छुरे व चम्मच और एक लाख रूमाल थे। इतनी बृहद सामग्री का हिसाब किताब रखना एक बहुत बड़ी बात रही होगी।

मुसाफिरों की सुरक्षा की उपेक्षा नहीं थी। जहाज में २४ जीवन नौकाएँ थीं जिनकी लंबाई ११ मीटर थी। दुर्घटना के मौके पर यह जीवन नौकाएँ रसोइयों व कर्मचारियों सहित तीन हजार दो सौ पचास व्यक्तियों को ले जाने में समर्थ थीं।

क्वीन मेरी ३० नाट या ५६ किलोमीटर से कुछ ज्यादा प्रतिघंटे की रफ्तार से चल सकता था। जहाज के इंजनों से एक लाख बारह हजार किलोवाट तक बिजली पैदा हो सकती थी।

क्वीन मेरी की सबसे दिलचस्प बात उसके दोनों तरफ से उसे स्थिर रखने के लिए लगे हुए मछली के समान पर (फिन) थे, जो उग्र समुद्र में उसका हिलना-डुलना कम रखते थे। यह जहाज की सतह से नीचे लगे हुए थे और ३.३ मीटर लंबे व

२.३ मीटर चौड़े थे। जब समुद्र शांत रहता था और जहाज़ हिचकोले नहीं खाता था तो उन्हें आधा जहाज के ढाँचे के नीचे कर लिया जाता था और उन्हें ऊपर की ओर मुँह करके रखा जाता था। लेकिन समुद्र के उग्र होने पर उनको पूरी तरह फैला दिया जाता था और वे विपरीत दिशा में एक ओर झुके रहते थे। इस प्रकार जहाज़ का डोलना थम जाता था और शायद ही मालूम देता हो।

क्वीन मेरी से भी बड़े जहाज बनाए गए। फ्रांसीसी जहाज नारमंडी और ब्रिटिश जहाज क्वीन एलिजाबेथ कुछ बड़े आकार के थे।

युद्धपोत

हम पहले ही उल्लेख कर चुके हैं कि जहाज़ किस तरह बनाए जाते थे और कैसे उन्हें युद्ध के लिए शस्त्रों से सज्जित किया जाता व किस तरह उन्होंने इतिहास बनाने में मदद पहुँचाई थी। यहाँ विभिन्न प्रकार के युद्धपोतों व अन्य जलयानों के बारे में कुछ कहना असंगत नहीं होगा। इन्हें आकार, संख्या और इनकी तोपों के आकार व उपयोग के उद्देश्य के आधार पर विभिन्न नाम दिए गए हैं। कुछ को विमानवाहक, युद्धक, शत्रु की टोह लेने वाला और अपने बेड़े का रक्षक (क्रूजर), विध्वंसक, पेट्रोल वाहक और सुरंग बिछाने व नष्ट करने वाला आदि नाम दिए गए हैं।

सन् १८५० के प्रारंभिक युद्ध पोतों में पाल के अलावा सहायक के रूप में भाप के इंजन भी लगे होते थे। यह ७७ मीटर से कुछ ज्यादा लंबे होते थे और इनकी रफ्तार करीब ११ किलोमीटर प्रति घंटे थी। क्लिपर नामक हल्के जहाज़ विशेषतौर से गति के लिए बनाए जाते थे। लाइटनिंग नामक ऐसा ही छोटा अमरीकी जहाज ३३ किलोमीटर प्रति घंटे की गति से चलता था। १८५४ में पाल अथवा भाप के इंजन के सहारे तीस वर्षों में इस गति तक कोई जहाज़ नहीं पहुँच सका था।

सबसे बड़े जंगी जहाज़ विमानवाहक होते हैं। इनका उपयोग हवाई जहाजों के लिए तैरते हुए हवाई अड्डों के रूप में होता है। यह तैरने वाले सबसे विशालकाय जहाज होते हैं। इनके डेक हवाई जहाजों के उतरने व उड़ान भरने की पट्टी का काम देते हैं।

;वाई जहाज़ों के रखने के हैंगर निचले डेक में होते हैं और उड़ान के समय शक्तिशाली लेफ्टों के जरिए उन्हें ऊपर के डेक पर लाया जाता है। बम, ईंधन व बारूद व अस्त्र रखने के भंडार भी होते हैं। विमानवाहक जहाज़ों में ज्यादा विमान भेदी अस्त्र नहीं होते हैं। अतएव इनकी हिफाजत के लिए कई विध्वंसक और क्रूजर (रक्षक) जहाज साथ चलते हैं।

जंगी जहाज भारी अस्त्रों से लैस होते हैं और बड़ी से बड़ी तोपें लेकर चलते हैं। यह तैरते हुए इस्पात के किलों के समान हैं। सबसे बड़ा जहाज २४० मीटर तक लंबा हो सकता है। इनके साथ अन्य अस्त्रों के अलावा १६ इंची (४०.६ से० मी०) दहानों वाली तोपें होती हैं जो ३२ किलोमीटर तक एक टन वजनी गोले फेंक सकती हैं। इन तोपों से जहाज के पानी की सतह से ऊपर के भाग पर एक वार गोलाबारी करने में हजारों पाउंड का खर्च बैठता है। जंगी जहाजों के इंजनों की विद्युत उत्पादन क्षमता तीस हजार से साढ़े सैंतीस हजार किलोवाट के बीच और गति सैंतीस से पैंतालीस किलोमीटर प्रतिघंटा होती है। रक्षक या टोही (क्रूज़र) जहाज अपेक्षाकृत छोटे और हल्के रहते हैं और इनकी गति ७६ किलोमीटर प्रतिघंटा या इससे ज्यादा होती है।

विध्वंसक जहाजों का निर्माण भी गति की दृष्टि से होता है। इनमें तोपों के अलावा, तारपीडो और विमान भेदी तोपें भी होती हैं। यह समुद्र की गहराई में भी मार करने वाले अस्त्रों से लैस होते हैं। इन अस्त्रों को अंग्रेजी में डेप्ट चार्ज कहते हैं। यह अस्त्र ज्यादा तकातवर विस्फोटक सामग्री युक्त कनस्टर या पीपे होते हैं। जिन्हें समान गति में डूबने के लिए छोड़ा जाता है। यह अपने गिराए जाने के बाद निर्धारित समय के भीतर विस्फोट करता है। इस विस्फोट से व्यापक क्षेत्र में पनडुब्बियों का विनाश हो जाता है।

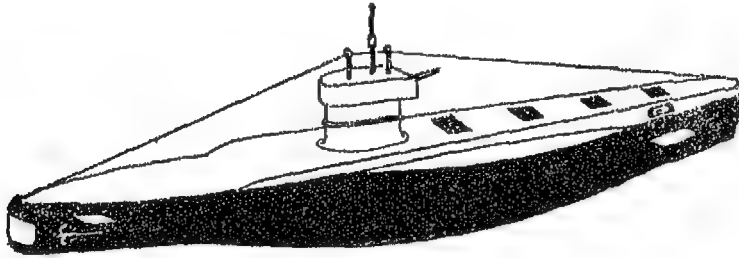
पनडुब्बियाँ

जहाज की यह किस्म अपने आप में एक कमाल है जैसा कि इसका पनडुब्बी

नाम है, यह पानी के भीतर रह सकती है और चल सकती है।

पहली ब्रिटिश पनडुब्बी सन् १९०२ में बनाई गई थी। इसमें छः सदस्यीय कर्मचारियों के रहने का कोई स्थान नहीं था।

दूसरे महायुद्ध में पनडुब्बियों का जमकर उपयोग हुआ। समुद्र में जहाजों को पहुँचने वाली क्षति का तीन चौथाई भाग इन्हीं के कारण था।

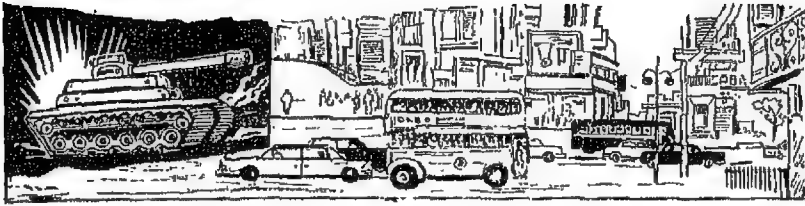
स्वाभाविक रूप से पनडुब्बियों का आकार अन्य जलयानों से अलग होता है। सिगार की शक्ल वाली ये पनडुब्बियाँ पानी के अंदर आसानी से चल सकती हैं। कई पनडुब्बियों में ऐसी मीनारें होती हैं जिनमें कि पेरिस्कोप लगे होते। हैं यह एक शीशे का

१२. पनडुब्बी

ऐसा दूरबीन होता है जिसके जरिए पनडुब्बी के पानी के भीतर रहने पर भी समुद्र-तल की चीजें साफ दिखाई देती हैं। हाल की पनडुब्बियों में मीनारों के बजाय एक बड़ा पाल लगा होता है।

पनडुब्बियों में दोहरे बाहरी हिस्से होते हैं जिनके बीच में हवा अथवा पानी के लिए जगह होती है। नीचे का हिस्सा ऐसा मजबूत बनाया जाता है जो सैकड़ों मीटर गहराई में पानी के दबाव को सहन कर सके। साठ मीटर गहराई में पानी का दबाव लगभग प्रति वर्ग सेंटीमीटर छः किलोग्राम होता है।

पानी के भीतर पनडुब्बियों की गति अड़तीस किलोमीटर प्रति घंटा होती है और पानी के ऊपर यह गति उन्नीस किलोमोटर प्रतिघंटा रह जाती है। ये पनडुब्बियाँ डीजल, पेट्रोल, बिजली अथवा आणविक शक्ति से चलाई जा सकती हैं। इनका पूरा विवरण आगे के अध्याय में दिया जा रहा है।

जर्मनी की पनडुब्बियाँ एक ऐसे ट्यूब का इस्तेमाल करती थीं जिसे स्नोरकल कहा जाता था। ये लंबी अवधि तक श्वास प्रक्रिया के लिए प्रयुक्त होता था। यह पनडुब्बियाँ अन्य पनडुब्बियों के विपरीत पानी के भीतर ज्यादा देर तक रह सकती थीं और तेजी से चल सकतीं थीं।

गोता लगाने के लिए पनडुब्बियाँ भारी बोझ अपनी टंकियों में रखती हैं। पानी का भार उन्हें इच्छित गहराई तक डूबने में समर्थ बना देता है। पानी सतह पर आने के लिए यह अपनी भार वाली टंकियों से पानी के वजन को निकाल फेंकती है। युद्ध में पनडुब्बियों का ज्यादातर इस्तेमाल जहाजों को नष्ट करने और सुरंगे बिछाने के लिए होता है।

अध्याय ३

यातायात की सबसे बड़ी समस्या

बिना घोड़ों की गाड़ियाँ

भाप के रेलइंजन की लोकप्रियता के साथ ही लोगों का यह सोचना स्वाभाविक ही था कि सड़कों पर चलने वाले वाहनों में भाप शक्ति का इस्तेमाल किया जाय। जल्दी ही भाप चालित मोटरें बन गईं और इनमें से कुछ तो काफी सफल रहीं। लेकिन जनता आवाज करने और धुआँ छोड़ने वाली गाड़ियों को देख कर डर गई। इन मोटरों में भाप बनाने के लिए ब्वायलर लगा होता था। अधिकारी भी इस भयानक दानव को आजादी के साथ सड़क पर दौड़ते देखना पसंद नहीं करते थे। पास से ऐसी मोटर गुजरते ही घोड़े घबरा जाते थे और गलियों के कुत्ते भौंकने लगते थे।

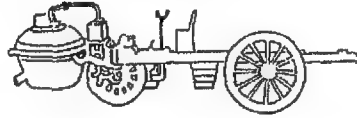
इसके अलावा इंग्लैंड में कुछ ऐसे भी लोग थे, जिन्होंने रेल और यात्री वाहक बग्घियों में काफी धन लगाया था और इनका धंधा भी खूब चल रहा था। वे इन बिना घोड़ों की गाड़ियों की प्रतिद्वंदिता नहीं चाहते थे। अतएव इन लोगों ने सरकार पर भारी दबाव डाला जिसने मजबूर होकर १८६८ में एक कानून बनाया। इस कानून

के अनुसार प्रत्येक ऐसी गाड़ी को जिसमें घोड़े न जुते हों तब तक सड़कों पर नहीं चलने दिया जाएगा, जब तक कि उसके ५४ मी० आगे एक लाल झंडी लेकर आदमी न दौड़ रहा हो। कानून ने स्थानीय अधिकारियों को यह अधिकार भी प्रदान कर दिए कि वे शहरों में इन गाड़ियों की रफ्तार ३.२ कि०मी० प्रति घंटा और शहर से बाहर ६.४ कि०मी० प्रति घंटा निश्चित कर दें। सन् १८७८ में इस कानून को थोड़ा-सा संशोधित किया गया। इसके अनुसार गाड़ी के आगे लाल झंडी लेकर चलने की जरूरत नहीं रह गई थी लेकिन एक जिम्मेदार आदमी को गाड़ी के १८ मी० आगे चलना पड़ता था। अंतत: नवंबर, १८९६ से यह सारे प्रतिबंध हटा लिए गए। लेकिन इन्होंने इंग्लैंड को लगभग एक दर्जन वर्ष पीछे धकेल दिया था।

इधर जर्मनी और फ़्रांस भी कुछ तरक्की कर चुके थे। जर्मनी ने तो पेट्रोल चालित इंजन बना लिया था और इन इंजनों से युक्त गाड़ियाँ वहाँ की सड़कों पर दौड़ रही थीं। फ़्रांस ने १८९४ में इस तरह की गाड़ियों की एक प्रतियोगिता आयोजित की, जिसमें १०२ ने भाग लेने की इच्छा व्यक्त की थी, लेकिन वास्तविक प्रतियोगिता में कुल २६ गाड़ियाँ ही दौड़ीं। १८९५ में फ़्रांस ने पहली मोटर दौड़ का आयोजन किया जिसमें १२ पेट्रोल चालित और ६ भाप चालित गाड़ियाँ शामिल हुईं। दौड़ की दूरी ११७० कि०मी० रखी गई थी। ११ में ८ पेट्रोल चालित गाड़ियाँ तो मंजिल तक पहुँच गईं, लेकिन भाप चालित ६ में केवल एक ही ऐसा कर सकती।

भाप चालित गाड़ियों के लिए यह एक भारी अपशगुन था। अगले वर्ष हुई दौड़ में कोई भी भाप चालित गाड़ी मंजिल तक नहीं पहुँच सकी। यह एक आखिरी चोट साबित हुई और हमेशा के लिए इसने भाप चालित गाड़ियों का नामोनिशान मिटा दिया।

लेकिन कुछ उत्साही लोग अब भी निराश नहीं हुए थे। इनमें से एक अमरीका के स्टेनली बंधु भी थे। इन लोगों ने स्टेनली स्टीमर नामक अपनी गाड़ी बनाई जो फ्लोरिडा की सन् १९०७ की गति परीक्षण प्रतियोगिता में उतरी थी। प्रतियोगिता में शामिल कोई भी पेट्रोल चालित मोटर १६० कि०मी० प्रति घंटे से ज्यादा गति नहीं दे

सकी जबकि स्टेनली स्टीमर की रफ्तार ३०० कि०मी० प्रति घंटे रही। रास्ते में सड़क का एक उभरा भाग इसके लिए घातक सिद्ध हुआ। वह इससे टकरा कर करीब तीस मीटर दूर जा गिरी और टुकड़े-टुकड़े हो गई।

१४. भाप चालित प्रारम्भिक ट्रक

लेकिन स्टीमर गाड़ी ने गति का जो प्रदर्शन किया था, उसका प्रभाव समाप्त नहीं हो सका। कई स्टीमर गाड़ियाँ तुरंत बिक गईं, हालाँकि उनका व्यापक पैमाने पर उत्पादन कभी नहीं किया गया था। यह गाड़ियाँ तेजी से दौड़ सकती थीं और आसानी से ढालदार सड़कों पर चढ़ सकती थीं। १९१८ में स्टीमर चलाते वक्त हुई एक दुर्घटना ने स्टेनली बंधुओं में से एक की जान ले ली। लोगों को हमेशा यह भय बना रहता था कि इस प्रकार की मोटरें खतरनाक हैं। इस दुर्घटना ने तो उनके भय को सच ही साबित कर दिया। आखिरकार इस योजना को समाप्त ही कर दिया गया।

आंतरिक (दाहक) ऊर्जा इंजन

आंतरिक (दाहक) ऊर्जा इंजन अथवा इंटरनल कम्बस्टशन इंजन एक महत्वपूर्ण अविष्कार था। आज भी मोटरों में इनका उपयोग हो रहा है। इस समय दो प्रकार के इंजन प्रचलित हैं, इनमें से एक पेट्रोल और दूसरा डीजल द्वारा संचालित होता है।

पेट्रोल इंजन के पिस्टन और बेलन (सिलिंडर) भाप चालित इंजन के समान ही होते हैं लेकिन उनका आकार अपेक्षाकृत छोटा रहता है। पेट्रोल इंजन में भाप के ब्वायलर की बजाय एक नई विधा प्रयोग में लाई जाती है, जिसे कारबोरेटर कहते हैं। इनमें पेट्रोल एक छिद्र से होकर कारबोरेटर में पहुँचता है और जहाँ वह भाप की शक्ति में बदल जाता है। एक अन्य छिद्र से कारबोरेटर में पहुँचने वाली हवा के साथ यह भाप मिश्रित हो जाती है। यह मिश्रण सिलिंडर तक पहुँचाया जाता है, जहाँ चिंगारी छोड़ने वाले प्लग से निकली चिंगारियाँ इसे विखंडित कर देती हैं। इस

विखंडन अथवा विस्फोट की शक्ति पिस्टन को आगे की तरफ धक्का मारती है।

डीजल इंजन में कारबोरेटर की बजाय आटोमाइजर का इस्तेमाल किया जाता है। आटोमाइजर में डीजल एक फुहार के रूप में बदल कर सिलिंडर तक पहुँचता है। उसे विखंडित करने के लिए चिंगारियों की जरूरत नहीं रहती है। जब इसका पिस्टन की सक्रियता के कारण पहले से ही काफी दाबी हवा के साथ संपर्क होता है, तो यह स्वयं ही विखंडित हो जाता है।

पेट्रोल और डीजल इंजनों को स्वयं दाहक (इंटरनल कम्बस्टशन) इंजन कहते हैं। इसमें इंजन का प्रज्ज्वलन अथवा दाह-क्रिया (बस्टशन) स्वयं इंजन के सिलिंडर में होती है। इसके ठीक विपरीत भाप के इंजन में, कोयले को, जो ईंधन के रूप में इस्तेमाल किया जाता है, व्वायलर में भाप पैदा करने के लिए इंजन के बाहर जलाया जाता है।

आंतरिक ऊर्जा अथवा दाहक इंजन का सबसे बड़ा लाभ यह है कि इसे बिना किसी पूर्व तैयारी के इच्छानुसार सक्रिय किया जा सकता है। भाप के इंजन को चालू करने से पहले भाप को तैयार करना पड़ता है और उसे तब तक गर्म किया जाता है, जब तक कि उसका दबाव उच्चतम सीमा पर नहीं पहुँच जाता है। जैसा कि बताया जा चुका है कि आंतरिक दाहक इंजन अत्यंत दक्ष होते हैं, वे अपने ईंधन द्वारा उत्पन्न शक्ति के ज्यादा भाग का उपयोग कर लेते हैं।

इस प्रकार के इंजनों का न केवल मोटरों में बल्कि जहाजों और रेल इंजनों में भी इस्तेमाल होने लगा है। हर जगह बड़ी तादाद में डीजल के रेल इंजनों का उपयोग हो रहा है।

मोटरकारों का उत्थान

इस बात पर बड़ा विवाद है कि किसने सबसे पहले पेट्रोल चालित मोटरकार बनाई थी। लेकिन यह स्वीकार किया जाता है कि जर्मनी के इंजन ड्राइवर का लड़का कार्ल बेंज पहला आदमी था जिसने १८८४ में इस तरह की मोटरकार बना कर चलाई

थी। उसने जनता के हाथ भी अपनी मोटरें बेची थीं। इस प्रकार वह पहला कार निर्माता और मोटर उद्योग का जनक था। सन् १८८६ के आखीर तक उसकी मोटरें सड़कों पर विश्वास के साथ चलाने के योग्य हो गई थीं। यह मोटर तीन पहियों की होती थी। आगे एक पहिया और पीछे दो पहिए अगल-बगल थे। दो वर्ष बाद इस तरह की मोटरों का निर्यात फ़्रांस और अमरीका को होने लगा। उस समय इसकी गति करीब तेरह कि०मी० प्रति घंटा थी।

इस सिलसिले में एक और नाम का भी उल्लेख किया जा सकता है और वह है जर्मनी का इंजीनियर गोटि्टलेब डेमलर का। उसने १८८५ में विश्व की सबसे पहली मोटरसाइकिल का आविष्कार किया था। उसने मोटरों में भी कई तकनीकी सुधार किए थे। जब उसने अपनी मोटरों का निर्यात फ़्रांस को शुरू किया तो वह बेंज का पहला प्रतिद्वंद्वी बन बैठा। उसके द्वारा किए गए सुधारों में मोटरकारों की गति २४ कि०मी० प्रति घंटा तक पहुँच गई थी।

शीघ्र ही फ़्रांस में भी मोटरें बनने लगीं। इंग्लैंड में पहली मोटर १८९४ में बाहर से मँगाई गई थी। वह बेंज की तीन पहियों वाली गाड़ी थी। १९०१ तक आयात की संख्या बढ़ती गई और निजी लोगों के पास एक हजार मोटरें हो गई थीं।

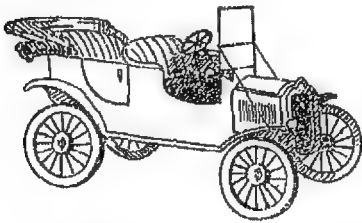
सन् १८९६ में यातायात प्रतिबंध हटा लिए जाने से जनता की दिलचस्पी बढ़ी और उसने इंग्लैंड में मोटर उद्योग की नींव रखी गई। मोटर उद्योग के इस उत्थान के साथ एक नाम हरबर्ट आस्टिन का भी जुड़ा हुआ है। उसे अपने कार्य के लिए सम्मानित किया गया था और सर की उपाधि भी मिली थी।

जनता कार

जैसा कि हम पहले ही देख चुके हैं, अमरीका ने सबसे पहले यूरोप से मोटर मँगानी शुरू कीं। बाद में अमरीकी प्रारूपकारों और इंजीनियरों ने अपनी खुद की मोटरें बनाना शुरू किया। दावा किया जाता है कि चार्ल्स ई० डरई ने १८९२ में पहली अमरीकी मोटर तैयार की थी। लेकिन मोटर उद्योग के साथ सबसे महत्वपूर्ण

नाम अमरीका के हेनरी फोर्ड का जुड़ा हुआ है।

डेट्रोइट के इंजीनियर फोर्ड एडीसन के बिजली कारखाने में काम करते थे। उन्होंने मोटरकारों पर अपने परीक्षण शुरू किए। १८९९ में उन्होंने अपनी नौकरी छोड़ दी और १९०३ में चालीस वर्ष की अवस्था में उन्होंने फोर्ड मोटर कंपनी के नाम से अपनी खुद की कम्पनी बनाई। कंपनी की शुरुआत २८ हजार डालर की नकद पूँजी के साथ हुई। इस पूंजी में १०० डालर का हिस्सा लेने वाली एक महिला को लाभांश के रूप में ९५ हजार डालर मिले थे। १९२६ में जब फोर्ड ने अन्य लोगों के शेयर खरीदे तो उन्हें इस महिला के हिस्से की दो लाख साठ हजार डालर कीमत अदा करनी पड़ी थी।

फोर्ड ने अपने शब्दों में जनता की मोटरकार, सस्ती कीमतों पर बेचने के लिए तैयार करनी शुरू की। उनका टी माडल जल्दी ही काफी लोकप्रिय हो गया। कीमत कम रखने के लिए फोर्ड ने व्यापक उत्पादन का तरीका निकाला। उत्पादन की सतत प्रक्रिया जारी रखने के लिए मोटर के प्रत्येक भाग की अलग-अलग उत्पादन शाखाएँ कायम की गई। प्रत्येक शाखा को एक भाग के उत्पादन का कार्य सौंपा गया था। कच्चे माल से शुरू होकर तैयार मोटर की शाखाओं तक यह प्रक्रिया चलती थी। निर्माण कार्य इतना समय नियन्त्रित था कि प्रत्येक पुर्जा और भाव ठीक वक्त पर अंतिम शाखा तक पहुँच जाता था। अंतिम शाखा से हजारों तैयार कारें रोज निकलने लगीं।

१५. १९०९ में बनी फोर्ड की टी-माडल कार

हेनरी फोर्ड उत्पादन और व्यापारिक प्रबंध के अग्रदूत थे। वे अपने कर्मचारियों को बेहतर वेतन देते थे और अन्य लोगों के मुकाबले उनके साथ अच्छा बर्ताव करते थे। बाद में उन्होंने अपनी अगाध संपति से जनता के कल्याण और विकास के लिए विश्व भर में फोर्ड संस्थान कायम किए।

इस तरीके के उपयोग का नतीजा यह हुआ कि फोर्ड की टी-माडल कार १९२४

में दो सौ नब्बे डालर के हिसाब से बिक रही थी और प्रत्येक वर्ष बीस लाख मोटरें तैयार होने लगी थीं।

फोर्ड के उदाहरण ने इंग्लैंड के एक मोटर निर्माता विलियम मौरिस को भी यही तरीका अपनाने की प्रेरणा दी। प्रथम विश्व युद्ध के बाद उन्होंने भी बड़े पैमाने पर उत्पादन शुरू किया और उनकी मौरिस माइनर कार सौ पाउँड की दर से बाजार में आई।

मौरिस ने अपने जीवन की शुरुआत एक साइकिल एजेंट के रूप में की थी और सर की उपाधि पाने के बाद वे लार्ड नफील्ड बन गई।

आधुनिक उतावलापन

तबसे सभी मानव आवश्यकताओं को सतुष्ट करने वाली विभिन्न प्रकार की मोटरें तैयार हुई हैं। 'जहाँ एक व्यक्ति या छोटे परिवार के लिए मोटरसाइकिलें स्कूटर और छोटी कारें बनी हैं, वहीं दूसरी तरफ धनी व्यक्तियों व मोटर दौड़ के शौकीनों की मनपसंद गाड़ियाँ भी तैयार हुई हैं। शहरों और ग्रामीण इलाकों के उन लोगों को, जो स्वयं अपनी कार रखने की स्थिति में नहीं हैं, बसें एक स्थान से दूसरे स्थान तक ले जाने लगी हैं। ट्रक और लारियाँ माल की ढुलाई करती हैं। यह वाहन रेलवे के व्यवसाय का एक बड़ा हिस्सा अपने कब्जे में करती जा रही है। ट्रक भंडार-गृह से माल लेकर उसे सीधे गंतव्य स्थान तक पहुँचा देते हैं। इससे पूरे मार्ग में माल को जगह-जगह चढ़ाए उतारे जाने की जरूरत नहीं होती, जबकि रेल द्वारा भेजे गए माल में ऐसा संभव नहीं है। माल की ढुलाई की प्रक्रिया में उसे पहुँचने वाली क्षति के लिए रेलवे काफी बदनाम है। हल्की और टूट सकने वाली चीजें भी ट्रकों द्वारा सुरक्षा के साथ भेजी जा सकती हैं, यह बात दूसरी है कि किराया कुछ ज्यादा लगता है।

इस सदी में निजी कार ने जीवन में एक क्रांति ला दी है। प्रत्येक देश में लाखों मोटरकारों की बाढ़-सी आ गई है और प्रत्येक वर्ष बनने वाली लाखों कारें इस बाढ़ में और सहयोग दे रही हैं। निजी कारें, नियमित व्यापारिक यातायात की पहुँच से बाहर

जगहों तक, लोगों को ले जा सकती हैं। वे लोगों को ऐसे प्राकृतिक दृश्यों का आनंद दिला सकती हैं, जो आमतौर से दुर्लभ होते हैं। निजी यातायात हमारे जीवन के साथ ऐसा घुलमिल गया है कि वह एक आदत बन गया है। वह अब आदत के दायरे से निकल कर एक उतावलापन अथवा सनक की हद तक पहुँच गया है। हम इनके इस्तेमाल पर ज्यादा जोर देते रहते हैं, जबकि इनसे ज्यादा पैदल चलना बहुत ही आसान और समय की बचत है।

इस हालत ने हमारी सड़कों पर भयानक अवरोध और भीड़भाड़ पैदा कर दी है। महत्वपूर्ण शहरों की सड़कों पर तो मोटरों की कतारों के कारण सुरक्षित और पैदल चलना मुश्किल हो गया है। लेकिन निजी कारें रखने की प्रवृत्ति बढ़ती ही जा रही है और साथ ही बढ़ रही हैं हजारों सड़क दुर्घटनाएँ। प्रत्येक वर्ष बड़ी तादाद में लोग अंगविहीन होते हैं अथवा मरते हैं।

जैसे वक्त गुजरता जाता है, वैसे ही मोटरें और ज्यादा सुरक्षित बनाई जा रही हैं। दुर्घटना रोकने एवं दुर्घटना होने के अवसर पर चोट से बचने के तरीके खोजे जा रहे हैं। ऐसे दरवाजों, जो मोटर उलटने पर न खुल सकें, आघात पड़ने पर न टूटने वाले शीशों, स्टीयरिंग की विशेष डिजाइनों और सीटों का परीक्षण हो रहा है और उन्हें मोटरों में लगाया जा रहा है। लेकिन मानव-प्रकृति ही अबाध गति से प्रत्येक वर्ष दुर्घटनाओं का कारण बनती जा रही है।

सबसे बड़ी समस्या

थकावट, उनीदापन, चिंता और नशा ड्राइवर अथवा चालक की नजर मंद कर देती है और उसकी विचार शक्ति पर भी असर पड़ता है। इस तरह के चालक सड़क पर चलते समय खतरनाक होते हैं।

अनाप-शनाप चलाने वाले, तेज गति के प्रेमी और वे लोग जो अच्छी स्थिति में न होने पर भी मोटरें चलाते हैं, केवल दुर्घटनाओं के जिम्मेदार नहीं हैं, बल्कि बिना रुके लंबी दूरी तय करने से उत्पन्न थकावट भी एक कारण है। इसका एक दिलचस्प

उदाहरण नीचे दिया जा रहा है, जिससे यह मालूम हो जाएगा कि किसी पर कभी क्या गुजर सकती है।

एक ड्राइवर ने अपना किस्सा यों बताया कि एक बार वह बहुत ही अच्छे और सीधे राजमार्ग पर गाड़ी चला रहा था। सड़क पर अन्य मोटरों की भीड़-भाड़ नहीं थी। वास्तव में उसके आगे जाने वाली कार काफी दूर थी और उसका आकार दूरी के कारण छोटा लग रहा था। वह उस गाड़ी के आगे जाने का इरादा नहीं रखता था, अतएव आराम से गाड़ी चला रहा था। इन परिस्थितियों में दुर्घटना एक तरह असंभव ही कही जाएगी। लेकिन जब ड्राइवर ने नजर डाली तो उसे अगली मोटर का आकार प्रत्येक क्षण बड़े से बड़ा दिखाई देने लगा। वह इतना भयभीत हो गया कि अपने होश खो बैठा। घबराहट में वह आवाज देने और हाथ हिलाने लगा लेकिन यह सब व्यर्थ सिद्ध हुआ और अगली कार से उसकी टक्कर हो गई। दुर्घटना में वह मरते-मरते बचा।

पाठक आसानी के साथ समझ सकते हैं कि क्या बात हुई होगी। पीछे वाली कार का ड्राइवर लापरवाह हो गया था और उसने जरा ज्यादा जोर से एक्सीलेरेटर (गति बढ़ाने का पुर्जा) पर पाँव रख दिया होगा। उसे यह मालूम नहीं हो रहा होगा कि उसकी मोटर गति पकड़ती जा रही है। आने वाली दुर्घटना के आसन्न खतरे से वह अपना मानसिक संतुलन गँवा बैठा था और उसे अपनी खुद की भूल का अहसास नहीं हो रहा था कि एक्सीलेटर पर से पाँव हटा लिया जाय। वह क्षण भर के लिए इतना हताश हो गया था कि उसे यह समझ में ही नहीं आया कि अगर जरा-सा पैर उठा लिया जाय तो दुर्घटना बचाई जा सकती है।

इस मानव प्रवृत्ति को रोकने के लिए एक अनोखा तरीका सोचा गया है। राजमार्गों पर मोटरों को विद्युतचालित (इलैक्ट्रानिक) यंत्रों द्वारा नियंत्रित किया जाय। प्रत्येक सड़क के बीच में बिछी विद्युतयुक्त धातु की एक पट्टी का संबंध नियंत्रक यंत्र से कायम रखा जाय। इस तरीके से मोटरकार बिना किसी गलती के राजमार्ग पर चलती रह सकेगी। इंफ्रारेड यंत्र मोटर को दूसरी मोटर से एक निम्नतम निश्चित

दूरी से ज्यादा पहुँचने पर उसकी गति कम कर सकेगी अथवा उसे अपने आप रोक देगी।

मोटर में बैठे लोग इन तरीकों के कारण निश्चिन्त होकर यात्रा कर सकेंगे और मोटरों में ड्राइवरों को कुछ करने की जरूरत नहीं पड़ा करेगी, बशर्ते उन्हें किसी दूसरी सड़क से न गुजरना हो, जहाँ ऐसी व्यवस्था नहीं है। ठीक समय पर मोटर में बजने वाली घंटी ड्राइवरों को इस बात का संकेत देगी कि वे अब अपनी मोटर काट कर आगे ले जा सकते हैं लेकिन राजमार्गों को ऐसे यंत्रों से सज्जित और नियंत्रित करने में काफी पैसा लगेगा। इसके अलावा इस तरीके को सामान्य बनाने में काफी समय लग जाएगा।

मोटरों के कारण उत्पन्न केवल यही समस्याएँ ही नहीं हैं। मोटरों के लिए बड़ी खर्चीली सड़कें और पुलों की जरूरत पड़ती है। मोटरों के लिए राजमार्ग ऐसे बनाए जाते हैं जहाँ वे दो सौ चालीस कि०मी० प्रति घंटे तक की रफ्तार से गुजर सकें। इन सड़कों को कोई दूसरी सड़क या रेल मार्ग न काट सके। जहाँ सड़कें कटती हों वहाँ उन्हें या तो ऊपर पुल बना कर अथवा सुरंगों के जरिए गुजारने की व्यवस्था करनी पड़ती है। राजमार्गों और पुलों के निर्माण व पुरानी सड़कों व पुलों के रखरखाव पर खर्चा मोटरों की तादाद के साथ तेजी से बढ़ता जा रहा है। इसके अलावा आबादी बढ़ने के साथ ही नई सड़कों, पुलों व सुरंगों के निर्माण के लिए जमीनें प्राप्त करना मुश्किल होता जा रहा है। शहरी क्षेत्रों में यह समस्या अत्यंत विषम है। पुराने शहर जिस समय बसे थे उस समय यातायात की स्थिति दूसरी थी। मौजूदा सड़कों को दोनों ओर से विशाल इमारतें घेरे रहती हैं, इनमें से कुछ राष्ट्रीय व कुछ ऐतिहासिक महत्व की होती हैं। इन्हीं बातों व अन्य कारणों से मौजूदा सड़कें और ज्यादा चौड़ी नहीं की जा सकती हैं।

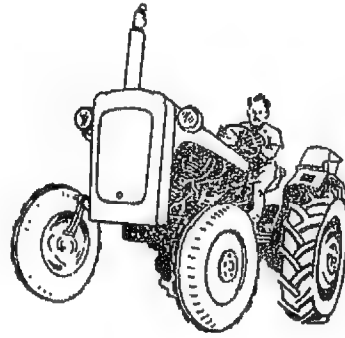
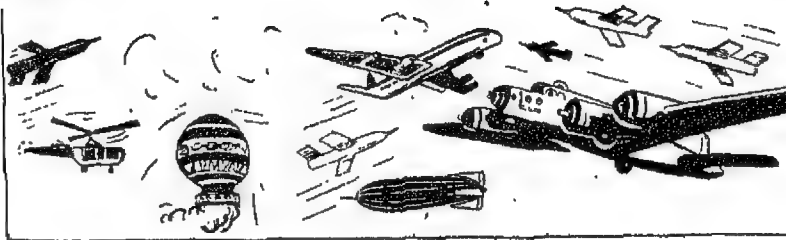
आधुनिक युग में मोटरों के बेतहाशा बढ़ते हुए उपयोग ने इसी तरह की कई समस्याएँ पैदा कर दी है। इन्हें कैसे हल किया जाएगा अथवा हल किया जा रहा है, इसका विवरण अगले अध्याय में दिया जा रहा हैं। वैसे मोटरें यातायात परिवार की सबसे ज्यादा समस्याजनक संताने हैं।

युद्ध उपयोगी वाहन

पेट्रोल और डीजल धरती पर युद्ध के समय यातायात में काफी उपयोगी सिद्ध हुए हैं। जीपें, हल्का सामान ढोने वाली गाड़ियाँ, ट्रक, एंबुलेंस, तोपवाहक गाड़ियाँ व अन्य प्रकार की गाड़ियों का आम प्रयोग हो रहा है। कुछ विशेष प्रकार की गाड़ियाँ केवल फौजी आवश्यकताओं की दृष्टि से ही बनाई गई है।

एम्फीवियन नामक ऐसा वाहन बना है जो जमीन और पानी पर समान रूप से चल सकता है। इसका निचला हिस्सा नाव की शक्ल का होता है, जिससे यह आसानी के साथ पानी पर चल सकता है।

पता चला है कि रोलीगन नामक एक और वाहन तैयार हुआ है और फौजी उपयोग के लिए उसका परीक्षण किया गया है। इसमें टायरों की जगह हवा भरे भारी थैले लगाए गए हैं, जिनका दबाव बहुत ही कम है। यह दावा किया गया है कि इस प्रकार के वाहन बिना किसी कठिनाई के छोटी पहाड़ियों और अवरोधों को पार कर सकते हैं। इसका भार व्यापक क्षेत्र में समान रूप से फैला रहता है जिससे कि यह आदमी को बिना चोट पहुँचाए उसके ऊपर से गुजर सकता है।

१६. ट्रैक्टर

हर दृष्टि से फौज के लिए महत्वपूर्ण वाहन टैंक होता है। अपने चालकों को सामान्य गोलाबारी से बचाने के लिए यह भारी बख्तरों से लैस होता है और इसमें बड़ी क्षमता वाली तोपें लगी होती हैं। टैंक चलता हुआ एक छोटा दुर्ग कहा जा सकता है जो अपने आस-पास भारी विनाश ला सकता है। इसमें नीचे की तरफ दाँतीदार ट्रैक्टर चैन या जंजीर लगी होती है, जिस कारण यह ऊबड़-खाबड़ और दलदली इलाकों में आसानी से चल सकता है। दूसरे विश्व युद्ध में टैंकों ने भारी भूमिका अदा की थी।

अध्याय ४

वायु और अंतरिक्ष में

आसमान छूने की लालसा

मनुष्य ने आसमान में पक्षी की तरह उड़ने की कल्पना हमेशा से की है। भूमि पर जीवन के कठिन और उसका बोझ सा बन जाने से उसका ऐसा सोचना स्वाभाविक ही था। वह सोचता है कि आसमान में पर फैला कर पीछे सारी चिंताएँ और परेशानियाँ छोड़कर उड़ना कितना अच्छा लगेगा या हो सकता है मनुष्य में विद्यमान किसी दैवी शक्ति ने उसे ऊपर उड़ान भरने की प्रेरणा दी हो। हर प्रकार से संतुष्ट और समृद्ध व्यक्ति भी अपने जीवन को खतरे में डाल कर कुछ ऊँचे और महान कार्य कर गुजरने की सोचता रहता है।

एक प्राचीन यूनानी कहानी है कि एक वास्तुकार डेडालस ने दो जोड़ा पर अपने और अपने लड़के के लिए बनाए थे। कहा जाता है कि यह पर उनके कंधों पर मोम द्वारा जमाए हुए थे। डेडालस ने अपने लड़के इकारस को सावधान किया था कि सूर्य के ज्यादा नजदीक नहीं जाना क्योंकि इससे मोम के पिघलने और परों के अलग हो जाने

का खतरा है। इकारस को संभवतः अधूरे काम पर विश्वास नहीं था। वह उड़ता हुआ सूर्य के नजदीक पहुँच गया। जैसा कि उसके पिता ने पहले ही चेतावनी दे दी थी, उसके पर अलग हो गए और वह आसमान से भूमि पर गिर कर मर गया।

यह स्वाभाविक बात है कि अपनी पहली उड़ान की लालसा में मनुष्य ने पक्षियों को आधार माना हो और शायद उसे यह भरोसा हो कि सिर्फ परों द्वारा ही आसमान की ऊँचाईयों तक पहुँचा जा सकता है। लेकिन बाद में विचारकों ने समस्या को वैज्ञानिक ढंग से लिया। फिलहाल जल्दी ही उन्हें मालूम हुआ कि बिना किसी उचित शक्ति का आधार लिए वे कुछ नहीं कर सकते हैं। कहा जाता है कि पंद्रहवीं सदी का ल्योनार्दो द विंसी नामक इटालियन चित्रकार एवं विश्व में पहला हवाई जहाज निर्माता बन गया होता, यदि उसके जमाने में स्वयं दाहक इंजनों (कम्बस्टशन) का आविष्कार हो चुका होता।

जमीन से हवा में ऊपर पहुँचने का पहला साधन मानव ने गुब्बारा खोजा। यदि एक हल्के थैले में हवा से भी हल्की गैस भर दी जाय, तो गुब्बारा उसी प्रकार ऊपर उठ जाता है जिस प्रकार गहराई में छोड़ी गयी डाट पानी द्वारा ऊपर धकेल दी जाती है। कोई साधन जिसमें यह सिद्धांत इस्तेमाल किया गया हो हवा से भी हल्की मशीन कहा जाता है।

१८. मौन्टगोल्फर का गुब्बारा

पहला गुब्बारा १७८३ में फ्रांस के मौंटगोल्फर बंधुओं ने छोड़ा था। उनका गुब्बारा कागज का एक विशाल थैला था। उसे आग के ऊपर उठाए रखा गया था और जैसे ही उसके अंदर मौजूद हवा गर्म हुई, वह हल्का होकर ऊपर उड़ चला। मौन्टगोल्फर का गुब्बारा तीन सौ मीटर तक ऊपर गया था।

सबसे हल्की हाइड्रोजन गैस की खोज ने गुब्बारों को ज्यादा लोकप्रिय बना

दिया। हाईड्रोजन युक्त गुब्बारे कई किलोमीटर ऊपर पहुँच सकते हैं।

प्रसिद्ध वैज्ञानिक गे लूज़ाक इसी तरह के एक गुब्बारे के जरिए ऊपर उड़ा था। गुब्बारे में हाइड्रोजन गैस भरी हुई थी और लूज़ाक गुब्बारे में लटकती हुई एक डलिया में बैठकर ऊपर गया था। उसने पहला प्रयास १८०४ में, अपने एक युवक साथी के साथ चार किलोमीटर तक की उड़ान भर कर किया था। बाद में वह अकेले ही ६.४ किलोमीटर ऊपर गया और विभिन्न स्तरों पर उसने वातावरण व हवा के दबाव का माप लिया। यह एक साहसी कार्य था, क्योंकि उसे हमेशा हवाओं की दया पर निर्भर रहना पड़ा था।

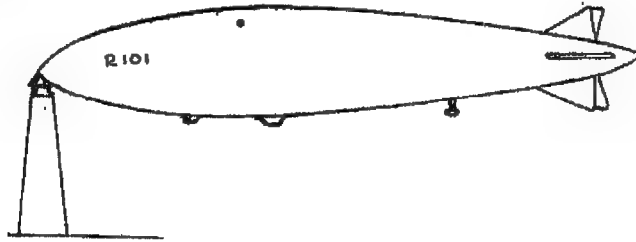
हवाई जहाज

गुब्बारों के साथ एक छोटा इंजन लगाने के प्रयास भी किए गए, जिससे कि उसे इच्छित दिशा की ओर ले जाया जा सके। ऐसा होने पर गुब्बारा पूरी तरह हवाओं दया पर निर्भर नहीं रह सकेगा। यह विचार अमल में आया और इसी ने हवाई जहाज़ों को जन्म दिया।

सिगार की शक्ल के भी यान बनाए गए, जो हल्की धातु के बने होते थे। जर्मनी का जेपलिन यान हिन्डनबर्ग विशाल आकार का था। यह लंबाई में लगभग दो सौ पैंतालीस मीटर और चौड़ाई में अधिकतम चालीस मीटर था। इसमें हाइड्रोजन गैस भरी रहती थी और यह दो सौ पैंतीस पाउंड तक का वजन उठा सकता था। इसमें पचास मुसाफिर व साठ कर्मचारी बैठ सकते थे।

लेकिन हाड्रोजन अति ज्वलनशील गैस होती है। हिन्डनबर्ग ने कई सफल यात्राएँ की थीं, लेकिन १९३७ में आग लगते हुए उसे जलकर भस्म होने में कोई ज्यादा वक्त नहीं लगा था। इस दुर्घटना में पैंतीस व्यक्ति मारे गए थे।

इससे ज्यादा बदकिस्मत दो सौ सैंतीस मीटर लंबा एक ब्रिटिश यान था। इसमें सौ व्यक्तियों के बैठने, खाने और सोने की पहले दर्जे की व्यवस्था की गई थी। इसकी गति एक सौ पाँच किलोमीटर प्रति घंटे की थी। उसने ४ अक्तूबर, १९३० को अपनी

पहली उड़ान भरी और फ्रांस में जा कर ध्वस्त हो गया। उसमें रखी पचास लाख क्यूबिक फुट हाइड्रोजन ने तुरंत आग पकड़ ली और नब्बे मीटर ऊँची लपटें उठने लगीं। कुल चौवन व्यक्तियों में से छः ही बच पाए थे।

१६. यान

इसी तरह कई दुर्घटनाओं ने हवाई जहाज़ों के अंत का संकेत दिया। हवाई जहाज़ का १६०६ में ही अविष्कार हो चुका था किंतु यह हवा से भी भारी होते थे। हालाँकि यह तेजी से तरक्की कर रहे थे किंतु जनता को इनकी लंबी और लगातार उड़ान भरने की क्षमता में विश्वास नहीं हो पाया था। इसकी बजाय वे गुब्बारों वाले यान संभवत: इसलिए पसंद करते थे कि इंजन की खराबी के बावजूद वह जमीन से टकरा कर ध्वस्त नहीं हो सकता था।

प्रथम विश्व युद्ध में इंग्लैंड पर हवाई हमलों के लिए जर्मनी ने दोनों ही तरह के यानों का इस्तेमाल किया था। लेकिन बड़े जहाज़ विमान भेदी तोपों का निशाना आसानी से बन जाते थे। इसीलिए इंग्लैंड ने कई जहाज मार गिराए जिसके कारण जर्मनी को हवाई हमला बंद कर देना पड़ा।

हवाई जहाज़ों के उत्थान के साथ ही गुब्बारों व गैसयुक्त यानों की उपेक्षा की जाने लगी। आजकल गुब्बारों का प्रयोग केवल ऊँचाइयों पर यंत्रों सहित मौसम संबंधी जानकारी प्राप्त करने के लिए होता है। छोटे यानों का प्रयोग पनडुब्बी विरोधी अभियानों में किया जा रहा है। लेकिन इनमें अब हाइड्रोजन गैस नहीं भरी

जाती है। ये हिलियम गैस का इस्तेमाल करते हैं जो हाइड्रोजन से भारी तो जरूर होती है, लेकिन उड़ानों के उद्देश्य के लिए यह अपेक्षाकृत हल्की होती है। इसके अलावा हीलियम एक ऐसी गैस है जो ज्वलनशील नहीं है।

ग्लाइडर और हवाई जहाज

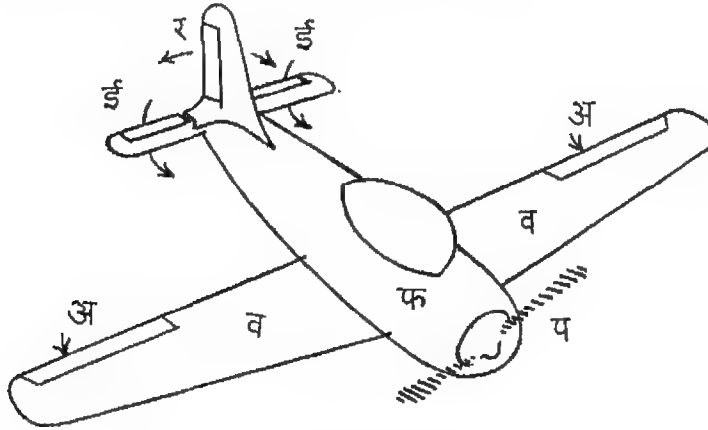
ग्लाइडर हवाई जहाजों के पूर्वज हैं। वे इंजन विहीन होते हैं और हवा की लहरों के उतार-चढ़ाव से उड़ते रहते हैं। आमतौर से वे जमीन से कुछ फुट ऊपर थोड़ी दूरी तक उड़ सकते हैं। अनुकूल परिस्थितियाँ होने पर कुशल ग्लाइडर चालक छत्तीस घंटों तक हवा में रह चुके हैं। ग्लाइडरों का वे छः सौ चालीस किलोमीटर दूर अठतालीस हजार मीटर की ऊँचाई तक उड़ा कर ले गए हैं।

ग्लाइडर की उडान में जर्मनी के ओटो लिलीन्थाल का नाम काफी मशहूर है। उसकी मृत्यु १८९६ में हो गई थी, जबकि ग्लाइडर पर से वह अपना नियंत्रण खो बैठा था। फ्रेंच, ब्रिटिश और अमरीका के उत्साही ग्लाइडर चालकों ने भी ग्लाइडरों के प्रयोग और उनमें सुधार किए हैं। हवाई जहाज के अविष्कारकर्त्ताओं के रूप में आगे चलकर मशहूर होने वाले राइट बंधुओं ने भी ग्लाइडरों का प्रयोग किया था। उन्होंने इसमें कुछ सुधार भी किए।

ग्लाइडरों से हवाई जहाजों तक की यात्रा आगे बढ़ने की एक स्वाभाविक प्रक्रिया थी। एक पादरी के लड़के ओरोविल्ले और विलबर राइट साइकिल की एक दुकान करते थे। उन्होंने ग्लाइडर में नौ किलोवाट का एक इंजन लगाया था और उसमें पंख लगाए थे।

पहली उड़ान उन्होंने १७ दिसंबर, १९०३ में भरी थी। बारह मिनट के भीतर करीब छत्तीस मीटर तक उड़ान की। उसी दिन चौथी कोशिश में उनसठ सेकिंडों में दो सौ उनसठ मीटर तक उड़ान की। यह ग्लाइडर एक कमजोर हल्की मशीन थी, जिसमें पंख लगे हुए थे और ऊपर मखमल तना हुआ था। इसका ढाँचा लकड़ी का था। इसने हवाई यात्रा का मार्ग खोला।

तबसे लगातार हवाई जहाज के सामान और प्रारूपों में सुधार होते रहे और लगभग बीस वर्ष बाद पहली पूर्ण धातु की मशीन सामने आई।

जैसा कि कहा जा चुका है कि हवाई जहाज हवा से भारी मशीन होती है, किंतु उसे ऊपर उठने के लिए किसी गैस की जरूरत नहीं पड़ती है।

२०. हवाई जहाज के भाग

अ : एलेरोन्स ई : एलेवेटर
र : रडर प : प्रापलर
व : पंखे फ : फ्यूजलैज

चित्र २० में हवाई जहाज के आवश्यक भाग दिखाए गए है। 'र' उसका रडर और पंखों 'व' के साथ यह हवाई जहाज को उड़ान के समय हवा में स्थिर रखता है। 'प' उसका प्रापलर या अगले पंखे हैं जो इंजन से चलते हैं और उसे आगे बढ़ने की ताकत देते हैं। इ उसके एलेवेटर हैं, जो उसे ऊपर उठने या नीचे उतरने में मदद करते हैं अ अर्थात् एलेरोन्स उसके पंख के भाग होते है। उनका झुकाव इच्छित दिशा में जहाज को दाएँ या बाएँ किसी भी तरफ मोड़ सकता है।

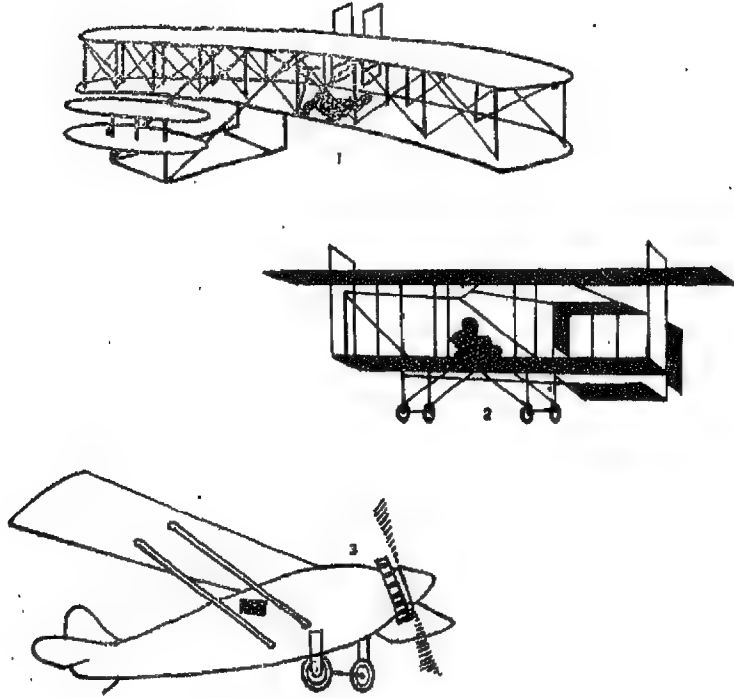
हालाँकि जहाज़ों ने तेजी से तरक्की की थी, लेकिन जनता उन पर विश्वास करने से घबराती थी। वह काफी अर्से तक अपनी दूर की यात्राएँ गैस चालित यानों से करती रही।

लिन्डबर्ग की उड़ान

१९२७ में अतलांतक महासागर पर लिन्डबर्ग द्वारा की गई ऐतिहासिक उड़ान ने ही हवाई जहाज के प्रति लोगों में विश्वास पैदा किया। इसने लोगों को दिखा दिया कि मुश्किल परिस्थितियों में लंबी यात्राएँ इसके द्वारा की जा सकती हैं।

चार्ल्स ए लिन्डबर्ग का जन्म १९०२ में हुआ था। बचपन से ही उसका दिमाग मशीनी कार्यों की तरफ झुका हुआ था और उड़ान का शौकीन था। वो १९२४ में फ्लाइंग कैडेट और १९२६ में व्यावसायिक पायलट बना।

लिन्डबर्ग की देखरेख में स्प्रिट आफ सेन्ट लुई नामक जहाज़ बना, जिसमें बैठ कर वह अतलांतक सागर पार करना चाहता था। जहाज के बन जाने के बाद उसने उसका अच्छी तरह परीक्षण व जाँच की।

जब लिन्डबर्ग ने न्यूयार्क से पेरिस तक उड़ान भरने की घोषणा की तो लोग आश्चर्यचकित हो गए। इससे कुछ अर्सा पहले दो फ्रांसीसियों ने पेरिस से न्यूयार्क जाने की कोशिश की थी किंतु उनका दुखद अंत हुआ। लिन्डबर्ग ने अकेले ही यह यात्रा करनी चाही थी। २० मई की सुबह सात बजकर बावन मिनट पर न्यूयार्क से लिन्डबर्ग ने अपनी यात्रा का शुभारंभ किया। वह अपने साथ यात्रा के लिए पर्याप्त पेट्रोल भी लिए हुए था। बाद में वह पाँच हजार आठ सौ साठ किलोमीटर की दूरी तय करके तैंतीस घंटे उन्तीस मिनट के भीतर पेरिस पहुँच गया। वह रातों रात एक हीरो बन बैठा और कई राष्ट्रों द्वारा उसे सम्मानित किया गया और कई राष्ट्रों ने कहा कि उसकी यात्रा धीरज और उसकी उड़ान कुशलता की कठिन परीक्षा थी। इन सबके अलावा लंबी यात्राओं के लिए हवाई जहाजों में विश्वास करने के प्रति लोगों में जो संदेह था, उसे इस उड़ान ने दूर कर दिया।

२१. प्रारंभिक हवाई जहाज

१. राइट बंधुओं का हवाई जहाज १९०३
२. पौलहन का हवाई जहाज १९१०
३. लिन्डबर्ग का हवाई जहाज १९२७

तब से हवाई जहाज़ों ने कई शांतिकालीन मिशन पूरे किए हैं। एडमिरल बायर्ड ने १९२६ में उत्तरी ध्रुव और १९२९ में दक्षिणी ध्रुव प्रदेश पर से उड़ाने

भरीं। हवाई जहाज़ एवरेस्ट पर्वत, रेगिस्तानों और तूफानों के बीच से गुजर चुके हैं। यदाकदा दुर्घटनाओं के बावजूद उनकी लोकप्रियता बढ़ती ही जा रही है।

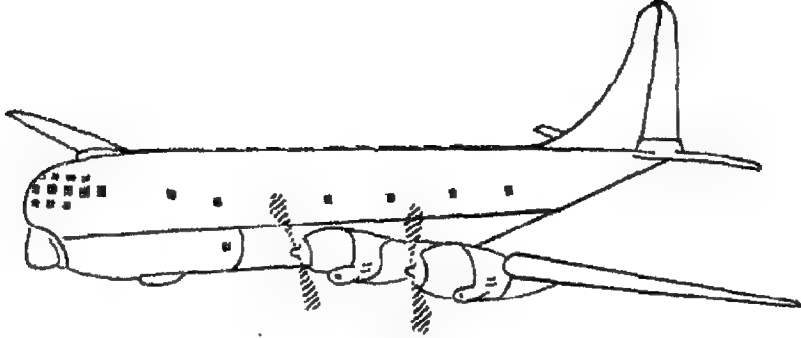
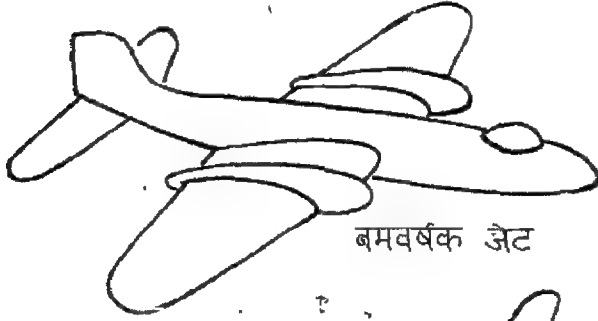
युद्ध में हवाई जहाज

हवाई जहाज़ों के इस्तेमाल ने तो युद्ध की तस्वीर ही बदल दी है। द्वितीय विश्व युद्ध में इन्होंने बहुत महत्वपूर्ण भूमिका अदा की थी। वे दुश्मन की फौज पर हमले के साथ ही लड़ाई को काफी दूर अंदर घुसकर दुश्मन के इलाके में ले जाते थे। युद्धरत सैनिकों के समान नागरिक भी इनके प्रहार से नहीं बच पाते थे।

युद्ध के दौरान कई प्रकार के विमान विकसित किए गए। युद्ध के सात वर्षों के भीतर विमानों के बारे में जो तरक्की हुई वह शांतिकाल के बीस वर्षों में ही संभव हो सकती थी। भारी बमबाज हवाई जहाज टनों बम लेकर दुश्मन के इलाके में दूर-दूर फौजी अड्डों और महत्वपूर्ण ठिकानों को अपना निशाना बनाते थे। दुश्मनों के विमानों से इनकी रक्षा के लिए लड़ाकू हवाई जहाज साथ रहते थे। अवरोधक विमानों या हवाई जहाजों का इस्तेमाल दुश्मन के हमलावर बमबाजों को भगाने अथवा मार गिराने के लिए किया जाता था। जहाँ-जहाँ जरूरत होती थी माल और यात्री वाहक जहाज हथियार, गोलाबारूद, खाद्य पदार्थ व अन्य सामान फौजियों को पहुँचाते थे। सबसे तेज यातायात होने के कारण हर जरूरी कार्य के लिए इन्हीं का उपयोग होता था।

उड़ने वाली मशीनों में हुए सबसे ताजे विकास ने इसकी उपयोगिता को बढ़ा दिया है। यह जेट प्रोपल्सन कहलाता है।

जेट प्रोपल्सन

जेट इंजन का सिद्धांत न्यूटन के गति संबंधी तीसरे नियम पर आधारित है। इस नियम के अनुसार प्रत्येक क्रिया की उसी के समान और विरोधी प्रतिक्रिया होती है। हम पहले ही देख चुके हैं कि अलेक्जेन्ड्रिया के हेरो ने किस प्रकार अपने भाप के इंजन में इसी नियम का पालन किया था।

२२. माल वाहक, बम वर्षक तथा लड़ाकू विमान

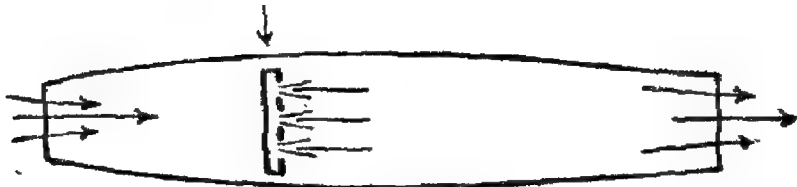
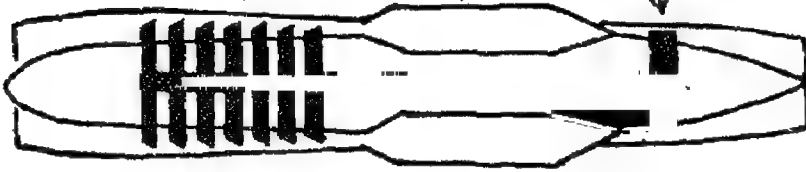
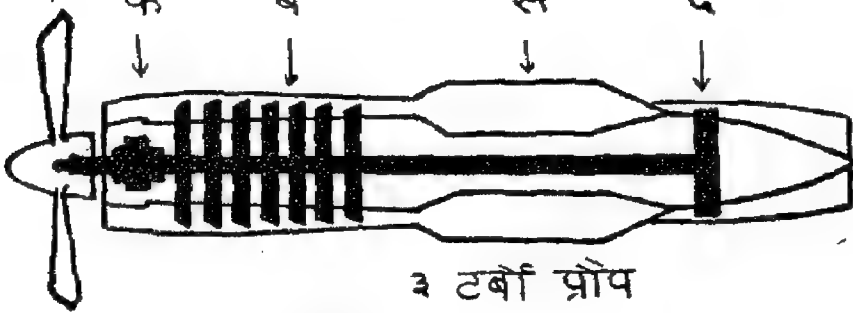
जेट इंजन के दाहक कक्ष में (कम्बस्टशन चेम्बर) में ईंधन जलता रहता है। इधन के जलने से बनने वाली गैस जेट के पीछे खुले हुए स्थान से तेजी के साथ बाहर निकलती है। इस प्रतिक्रिया से जेट को आगे बढ़ने के लिए धक्के लगते हैं।

प्रत्येक किस्म के ईंधन को जलने के लिए आक्सीजन की जरूरत होती है। जेट इंजन अपने ईंधन के लिए वातावरण की हवा से आक्सीजन प्राप्त करता है। अतएव जेट बिना हवा के नहीं चल सकते हैं।

आमतौर पर जेट तीन प्रकार के होते हैं। इनके नाम हैं—रेमजेट, टर्बोजेट और टर्बोप्रोप।

इन तीनों में रेंमजेट सबसे सरल है। इसके सामने की ओर खुला स्थान होता है जिसमें से जेट के आगे बढ़ने के साथ ही हवा अंदर प्रविष्ट होती है। ईंधन पहुँच कर हवा में मिश्रित होता रहता है और प्रज्ज्वलित हो जाता है। इस मिश्रण के जलने से उत्पन्न गेस तेजी के साथ पिछले हिस्से के खुले स्थान से निकल कर जेट को आगे बढ़ने में मदद देती है।

टर्बोजेट में रेंमजेट के समान ही हवा सामने के खुले स्थान से प्रवेश करती है, लेकिन उसके भीतर एक कम्प्रेसर (दबाव वाला यन्त्र) लगा होता है जो हवा में ऊँचा दबाव उत्पन्न करता है। इससे हवा दाहक कक्ष में जाकर ईंधन से मिश्रित होती है और उसे प्रज्ज्वलित करती है। उत्पन्न गैसें बाहर निकलते समय एक टरबाइन या पंखे वाले चक्के के पंखों की कगारों अथवा किनारों से टकराती हैं। यह पंखे इस प्रकार बने होते हैं कि गैस का आघात उन्हें धुरे सहित चक्कर दिलाने लगता है। इससे कम्प्रेसर भी घूमने लगता है क्योंकि वह भी धुरे में लगा होता हैं। बाहर निकलने वाली गैसों की शक्ति के एक हिस्से का इस्तेमाल इस प्रकार भीतर आने वाली हवा में दबाव उत्पन्न करने के लिए होता है।

टर्बोप्रोप की टर्बो जेट के साथ केवल यही समानता है कि उसमें भी टरबाइन होता है। किन्तु इसके टरबाइन का धुरा दबाव उत्पन्न करने वाले यंत्र के साथ ही जेट के सामने लगी चर्खी या प्रोपेलर को भी सक्रिय करता है।

२३. जेट हवाई जहाजों के प्रकार

यह ध्यान देने योग्य बात है कि रेमजेट में कोई टरबाइन नहीं होती है। जेट इंजनों के सही ढंग से कार्य करने के लिए ऊँचे दबाव पर हवा का होना जरूरी है। रेमजेट में यह दबाव उस तेज गति से उत्पन्न होता है, जिस गति से जहाज़ चलता है। इसके अर्थ हैं कि तेज गति से चलने पर ही रेमजेट काम दे सकता है। इसलिए इसमें एक और इंजन की जरूरत पड़ती है, जो इसे चालू करके आवश्यक रफ्तार में लावे। लेकिन इस जेट से कई फायदे भी हैं। इसमें कोई घूमने वाला हिस्सा न होने के कारण यह ऊँचे तापमान पर भी काम कर सकता है। यह अन्य दो जेटों के मुकाबले कम ईंधन खर्च करता है।

जेट हवाई जहाजों के आविष्कार ने तेज गति से यात्रा संभव बना दी है। आवाज की गति बारह सौ किलोमीटर प्रति घंटा है। जबकि जेट इस गति सीमा को बहुत ज्यादा पार कर गए हैं और इन्होंने हवाई यात्रा के दायरे और अवसर को बढ़ा दिया है।

वायुमंडल के विजेता

जबसे हवाई यातायात में ये सुधार हुए हैं, हवाई जहाज़ विश्व के कोने-कोने में लोगों को ले जा रहे हैं। मुसाफिरों की तादाद, उड़ान का क्षेत्र और गति भी बढ़ती जा रही है। विशाल जहाज एयर लाइनर कहलाते हैं। यह घने और निम्न वायुमंडल को भेद कर उसके काफी ऊपर उड़ानें भरते हैं और सैंकड़ों यात्रियों को ले जाते हैं। कुछ हवाई जहाज़ नियमित उड़ानों में धरती से दस से तेरह हजार मीटर ऊँचे, नौ सौ साठ किलोमीटर प्रति घंटे की गति से एक सौ साठ तक मुसाफिर ले जा सकते हैं। रूसी टी० यू०-१४ तथा जम्बो जेट क्रमशः २२० तथा ४०० मुसाफिर तक ले जा सकते हैं।

एक काफी ऊँचे उड़ते हुए जेट हवाई जहाज़ का अत्यन्त दिलचस्प किस्सा है। इसने कुछ वर्ष पहले अंतर्राष्ट्रीय स्तर पर एक भारी सनसनी पैदा कर दी थी। यह जहाज़ अमरीकी था और इसका नाम यू-२ था। यह सोवियत संघ पर काफी ऊँची उड़ान भर कर वहाँ की फौजी जानकारियाँ एकत्र करता था। सामान्य तौर से यह

पंद्रह हजार मीटर की ऊँचाई पर उड़ता था और इक्कीस हजार मीटर तक ऊपर और जा सकता था। इस ऊँचाई पर यह छः घंटे तक उड़ान भर सकता था। इक्कीस हजार मीटर की ऊँचाई पर उड़ान भरने वाला यह जहाज रूसी लड़ाकू जहाज़ों की पहुँच के बाहर था जो वर्षों तक अनुमान ही लगाते रहे। अप्रैल १९६० में एक उड़ान के दौरान इंजन की कुछ गड़बड़ी के कारण इसे नीचे आना पड़ा और ऐसा होते ही उसे रूसी जेट हवाई जहाजों ने दबोच लिया।

यू-२ ग्लाइडर की किस्म का जेट था। उसके पंखों की लंबाई लगभग चौबीस मीटर और ढाँचा पंद्रह मीटर लंबा था। यह एक हल्की धातु का बना हुआ था। इसमें विशेष ईंधन का प्रयोग होता था, क्योंकि इक्कीस हजार मीटर की ऊँचाई पर वायुमंडल संबंधी निम्न दबाव होने के कारण आमतौर से प्रयुक्त मिट्टी का तेल और पैट्रोल के मिश्रण वाले ईंधन के उबल जाने का खतरा था।

अंतरिक्ष यात्रा

अंतरिक्ष यात्रा से हम क्या समझते हैं? क्या इक्कीस हजार मीटर की ऊँचाई तक पहुँचने वाला यू-२ हवाई जहाज वायुमंडल में अथवा अंतरिक्ष में उड़ान भर रहा था?

यातायात की दृष्टि से यह कहा जा सकता है कि अंतरिक्ष की शुरूआत वहाँ होती है जहाँ से हवा पतली पड़ने लगती है और हवाई जहाज़ को आगे बढ़ाने वाले ईंधन का शीघ्रता से जलना संभव न हो सके। इस सीमा से पार यात्रा करने वाले वाहन को अपने पास आक्सीजन का पर्याप्त भंडार रखना पड़ता है।

जितना ही हम ऊपर जाएँगे, वायुमंडल उतना ही पतला होता जाएगा। वायु का दबाव समुद्र तल से प्रतिवर्ग सेंटीमीटर करीब एक किलोग्राम होता है। पाँच किलोमीटर की ऊँचाई पर यह उक्त दर का आधा, सोलह किलोमीटर पर दस प्रतिशत और बत्तीस किलोमीटर पर एक प्रतिशत रह जाता है।

राकेट, जिनके बारे में आगे बताया जाएगा, अपनी खुद की आक्सीजन ले कर चलते हैं। वे अपने ईंधन की दाह क्रिया के लिए वायुमंडल में व्याप्त आक्सीजन पर

निर्भर नहीं रहते हैं। हवा उनकी उड़ान में बाधक बनती है, अतएव वे उस जगह ज्यादा उपयोगी सिद्ध होते हैं जहाँ कि हवा नहीं होती है। यह पाया गया है कि करीब एक सौ नब्बे से दो सौ पचपन किलोमीटर की ऊँचाई पर एक तरह शून्य सा है। इस सीमा से बाहर राकेट को उड़ान भरता देखकर राकेट इंजीनियर को प्रसन्नता ही होती है।

अंतरिक्ष उड़ानों में इसीलिए राकेटों का इस्तेमाल किया जाता है। वे जेट इंजनों के समान ही कार्य करते हैं और फर्क केवल इतना ही है कि उनके पास अपने साथ आक्सीजन और ईंधन का स्वयं अपना भंडार होता है। इसलिए उन्हें किसी टरबाइन या प्रोपेलर की जरूरत नहीं होती है। राकेट के दाहक कक्ष में ईंधन और आक्सीजन का मिश्रण प्रज्ज्वलित होता रहता है। इस प्रकार उत्पन्न काफी मात्रा में गैस तेजी के साथ राकेट के पिछले हिस्से से निकलती रहती है। इन्हीं की प्रतिक्रिया राकेट को आगे बढ़ाती है।

राकेट ठोस अथवा तरल ईंधन का इस्तेमाल करते हैं। तरल ईंधन वाले राकेट ईंधन और आक्सीजन अलग-अलग टंकियों में लेकर चलते हैं। जलने के समय दाहक कक्ष में यह दोनों मिश्रित होते रहते हैं। ठोस ईंधन वाले राकेटों में ईंधन आक्सीजन मिश्रित होता है और उन्हें एक ही टंकी में रखा जाता है।

राकेट एक खंड वाले या बहुखंडीय हो सकते हैं। बहुखंडीय राकेट में दो या इससे ज्यादा राकेट जुड़े होते हैं। सबसे नीचे के राकेट को प्रक्षेपण या बूस्टर राकेट कहा जाता है। यह पहले प्रक्षेपित किया जाता है और जब इसका सारा ईंधन जल जाता है तो अगले खंड का ईंधन प्रज्ज्वलित होता है। खाली पहला खंड अलग होकर गिर जाता है। इसका एक लाभ है, क्योंकि खाली राकेट अलग होकर बोझ को हल्का कर देता है। इसके फलस्वरूप बहुखंडीय राकेट उसी मात्रा के ईंधन से ज्यादा गति पैदा कर सकते हैं।

इस्केप वेलोसिटी अथवा निकास गति

यदि हम क्रिकेट की गेंद को ऊपर फेंके, तो वह एक ऊँचाई तक पहुँचने के बाद

नीचे गिर जाएगी। उसके नीचे गिरने के पीछे होता यह है कि उसे हमेशा धरती की गुरुत्वाकर्षण शक्ति अपनी ओर खींचती रहती है। वह ताकत जिसके द्वारा जमीन सभी वस्तुओं को अपनी ओर आकर्षित करती है गुरुत्वाकर्षण कहलाती है।

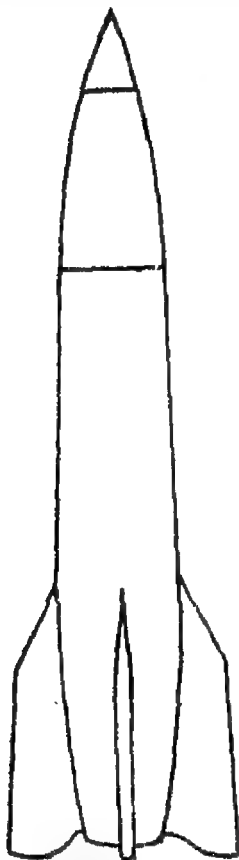
अगर हम ज्यादा से ज्यादा ताकत के साथ गेंद को फेंकें तो वह काफी ऊँचाई तक जाने के बाद नीचे आना शुरू करेगी। यह अनुमान लगाया गया है कि यदि कोई वस्तु ग्यारह दशमलव तीन किलोमीटर प्रति सेकेंड की गति से ऊपर फेंकी जाए तो वह कभी नीचे नहीं आएगी, क्योंकि तबतक वह पूरी धरती के आकर्षण से मुक्त हो चुकी होगी। यह गति धरती से निकास की गति के नाम से जानी जाती है।

सात दशमलव चार किलोमीटर प्रति सेकेंड गति की वह निम्न सीमा है जिससे फेंकी गई चीज न तो धरती पर वापस ही आ सकती है और न ही अंतरिक्ष की ओर बढ़ सकती है। यदि कोई राकेट गति पकड़ने पर क्षितिज के समानांतर दिशा ले लेता है, तो वह धरती के चारों तरफ घूमता ही रहेगा। इसी प्रकार के राकेट को धरती के चारों ओर चक्कर लगाने के लिए छोड़ा गया कृत्रिम अंतरिक्ष उपग्रह कहते हैं। सैटेलाइट या उपग्रह एक ग्रह का चक्कर लगाने वाली वस्तु को कहते हैं और आरबिट ग्रह के चारों ओर रास्ते को कहा जाता है।

कृत्रिम उपग्रह

राकेट के बारे में बहुत पहले से जानकारी है और इनका इस्तेमाल युद्ध के हथियारों के रूप में होता था लेकिन द्वितीय महायुद्ध में इन्हें भयानक संहारक शक्ति के रूप में विकसित किया गया था। इंगलैंड पर प्रहार करने के लिए जर्मनी ने अपने वी-१ और वी-२ राकेटों का प्रयोग किया था। यह राकेट अपने साथ भारी विस्फोटक सामग्री लेकर चलते थे।

जर्मनी की पराजय के बाद मित्र राष्ट्रों ने प्रयोग में न आए काफी राकेटों को अपने कब्जे में ले लिया था। यह राकेट वी-२ किस्म के थे। इनको बनाने के लिए मित्र राष्ट्रों ने कुछ जर्मन वैज्ञानिक और इंजीनियरों की मदद प्राप्त कर ली थी।

बाद में अमरीका और रूस ने राकेट अनुसंधान का व्यापक अभियान शुरू कर दिया। पहले राकेटों को निश्चित लक्ष्य तक बम ले जाने के उद्देश्य से तैयार किया जाता था। अब एटम और हाईड्रोजन बम भी बन गए हैं। राकेट को प्रक्षेप्यास्त्र भी कहते हैं जो परमाणविक बम ले जा सकता है और एक नया और अत्यंत घातक यंत्र सिद्ध हो सकता है।

समय गुजरने के साथ ही मिज़ाइल अथवा प्रक्षेप्यास्त्रों को विकसित किया जाता रहा है। जिससे कि वे ज्यादा से ज्यादा दूरी तक जा सकें। जो पाँच हजार किलोमीटर तक जा सकते हैं उन्हें इंटरमीजिएट रेंज बैलिस्टिक मिज़ाइल अथवा मध्यम दूरी के प्रक्षेप्यास्त्र कहते हैं। जो प्रक्षेप्यास्त्र इस सीमा से बाहर और आठ हजार किलोमीटर से भी ज्यादा दूरी तक जा सकते हैं उन्हें अंतर्महाद्वीपीय प्रक्षेप्यास्त्र अथवा इंटर-कौंटीनेंटल बैलिस्टिक मिज़ाइल कहा जाता है। अब तो इस प्रकार के प्रक्षेप्यास्त्र साढ़े चौदह हजार किलोमीटर तक पहुँच सकते हैं।

२४. जर्मनी का वी-२ राकेट

इसी प्रकार के राकेटों से मिल कर बहुखंडीय राकेट बनता है जिसका उपयोग अंतरिक्ष-खोज में होता है। सबसे पहला कृत्रिम उपग्रह स्पूतनिक-१ के नाम से सोवियत रूस ने ४ अक्तूबर, १९५७ में भेजा था। इसके घूमने का दायरा धरती से दो सौ तीस किलोमीटर निकटतम और नौ सौ पचास किलोमीटर अधिकतम था। इसमें ८३.५ किलोग्राम वजन के वैज्ञानिक यंत्र रखे हुए थे।

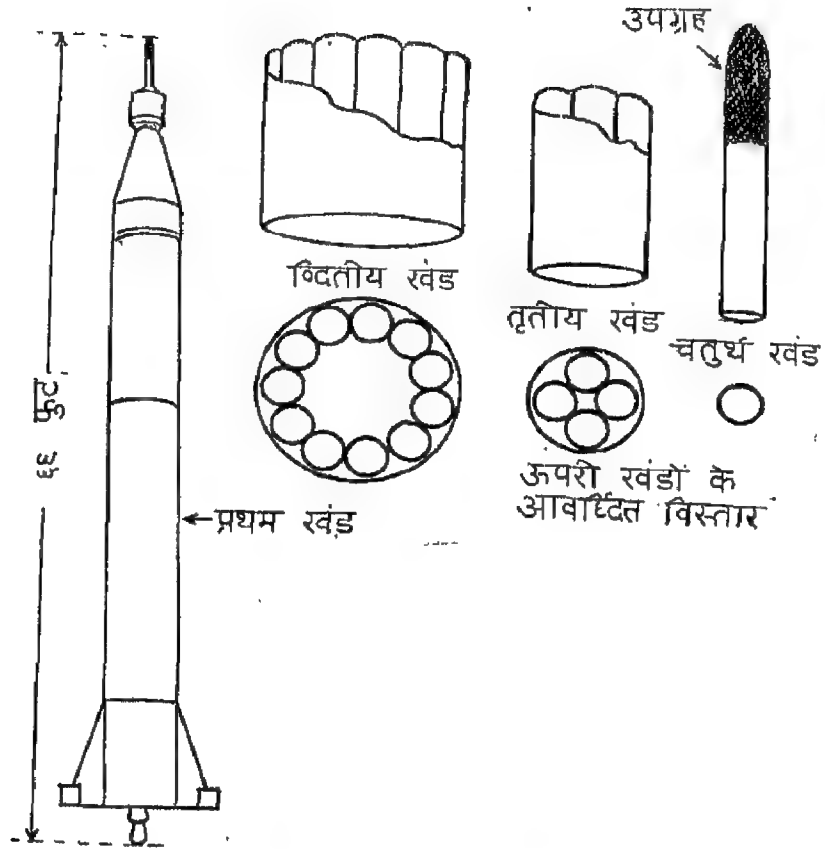
अमरीका ने अपना पहला भू-उपग्रह ३१ जनवरी, १९५८ को भेजा जिसका नाम एकसप्लोरर-१ था। इसकी निकटतम दूरी तीन सौ साठ किलोमीटर तथा अधिकतम दूरी ढाई हजार किलोमीटर के लगभग थी। उसमें करीब ८.२ किलोग्राम भार के यंत्र थे।

इन उपग्रहों के भेजने का उद्‌देश्य धरती की सतह के ऊपर विभिन्न ऊँचाईयों की स्थिति की खोज करना था। इन स्थितियों के अध्ययन से मानव द्वारा अंतरिक्ष यात्रा के समय उठाए जाने वाले खतरों और उनसे बचाव के उपायों का संकेत मिलता है।

अगला कदम अंतरिक्ष में पशु को भेजना था। ३ नंवबर, १९५७ को भेजे गए दूसरे रूसी उपग्रह स्पूतनिक-२ में लाइका नाम की एक कुतिया भी थी। उपग्रह में चौवन परिक्रमाओं तक वह जीवित रही और उड़ान भरने के करीब सौ घंटे बाद विना किसी कष्ट के मर गई।

अंतरिक्ष की खोज के लिए भेजे जाने वाले राकेटों की बनावट की जानकारी देने के लिए हम अमरीकी राकेट एक्सप्लोरर-१ को ले सकते हैं।

इस राकेट की कुल लंबाई इक्कीस मीटर (६९ फुट) थी। पहले खंड का नाम रेडस्टोन राकेट था। दूसरे खंड में ग्यारह ठोस ईंधन युक्त छोटे राकेट थे, जिन्हें एक दायरे में रखा गया था। तीसरे खंड में इसी प्रकार के चार या पाँच छोटे राकेट थे। चौथे और अंतिम खंड में एक छोटा राकेट था जिससे कि यंत्रों से लैस उपग्रह जुड़ा हुआ था।

रेडस्टोन तरल ईंधन से चलता है और इसके लिए उसने हाइड्रोजाइन को ईंधन के रूप में इस्तेमाल किया था। चौथे खंड में जिससे कि उपग्रह जुड़ा था, कोई ईंधन नहीं था, वह मात्र एक खाली खोल ही था। उपग्रह के साथ यह भी पृथ्वी के चक्कर लगाने लगा था। तेरह किलोमीटर वजन वाला यह राकेट दो सौ सेंटीमीटर लंबा और करीब पन्द्रह सेंटीमीटर गोलाई में था। यंत्रों का पैकेट ही लंबाई में एक मीटर का तीन चौथाई भाग था।

२५. एक्सप्लोरर-१

प्रथम खंड—तरल ईंधन युक्त राकेट

द्वितीय खंड—ग्यारह ठोस ईंधन युक्त राकेट

तृतीय खंड—चार ठोस ईंधन युक्त राकेट

चतुर्थ खंड—उपग्रह से जुड़ा हुआ एक ठोस ईंधन युक्त राकेट

अंतरिक्ष यात्रा की समस्याएँ

हालाँकि कृत्रिम उपग्रह परिक्रमा के लिए अंतरिक्ष में भेजे तो जरूर गए किंतु मानव को भेजने में काफी समस्याएँ थीं।

हम जितना ही ऊपर जाते हैं उतना ही वायुमंडल का दबाव घटता जाता है। आठ किलोमीटर की ऊँचाई पर मनुष्य को साँस लेने के लिए आक्सीजन की जरूरत पड़ती है क्योंकि हवा काफी पतली हो जाती है। उन्नीस किलोमीटर की ऊँचाई पर पर शरीर के भीतर मौजूद तरल पदार्थ कम दबाव के कारण उबलने लगते हैं, इस लिए केवल आक्सीजन ही कोई काम नहीं कर सकती है। इस ऊँचाई अथवा इससे भी ऊपर जाने वाले मनुष्य की तुरंत मौत हो सकती है। अतएव हवा का आवश्यक दबाव कायम रखने के लिए विशेष प्रकार की अंतरिक्ष पोशाक और कक्ष की व्यवस्था करनी पड़ती है।

इनके अलावा सूर्य के प्रकाश (रेडियेशन), कास्मिक किरणों और उल्काओं जैसे खतरों की समस्याओं का भी अध्ययन बहुत जरूरी है। इसके अलावा एक और महत्वपूर्ण तथ्य है, जिस पर ध्यान देना जरूरी रहता है और वह है वायुमंडल से बाहर आने पर राकेट के साथ हवा की रगड़ से पैदा होने वाली गर्मी या ताप।

अंत में गुरुत्वाकर्षण शक्ति के कुछ अनोखे प्रभाव भी पड़ते हैं। जैसे-जैसे राकेट गति पकड़ता है वैसे-वैसे कक्ष में बैठे अंतरिक्ष यात्री को ऐसा लगता है कि मानों उसका वजन बढ़ता जा रहा है। इसके विपरीत जब वह गुरुत्वाकर्षण के दायरे के भीतर स्वातंत्रतापूर्वक घूमता है तो उसे भारहीनता महसूस होती है। लिफ्ट में ऊपर-नीचे जाते समय हम भी थोड़ा-बहुत यह अनुभव कर सकते हैं। मानव किस सीमा तक इन प्रभावों को बर्दाश्त कर सकता है उनका अध्ययन किया जाना और उसी के अनुसार यात्रा की पूर्ण योजना बनाना अति आवश्यक है।

यह तथ्य कि लाइका करीब सौ घंटे तक जीवित रही थी, यह दिखलाता है कि ज्यादातर यह समस्याएँ हल कर ली गई थीं। अंतरिक्ष में जाने को उत्सुक मानव

के लिए यह एक हरी झंडी थी।

अंतरिक्ष में मानव

पहला मानवयुक्त उपग्रह १२ अप्रैल, १९६१ को अंतरिक्ष रवाना हुआ था। यह रूसी उपग्रह वोस्तोक-४ था, जो धरती की परिक्रमा के लिए यूरी गागारिन को ले कर रवाना हुआ था। वह पृथ्वी के कक्ष का चक्कर पूरा कर वापस आ गए थे। उनकी परिक्रमा की परिधि सबसे निकटतम १७३ किलोमीटर और दूरतम ३०० किलोमीटर थी।

अमरीका की ओर से पहले अंतरिक्ष यात्री एलेन बी शेपर्ड थे, जो ५ मई, १९६१ को करीब १८७ किलोमीटर की ऊँचाई तक गए जरूर थे, लेकिन धरती की परिक्रमा करने में असमर्थ रहे। धरती की परिक्रमा अमरीका की ओर से पहली बार जौन एच ग्लेन ने की। यह २० फरवरी, १९६२ को रवाना हुए थे। उनके उपग्रह का नाम फ्रेंडशिप-७ था और प्रक्षेपण राकेट का नाम एटलस था।

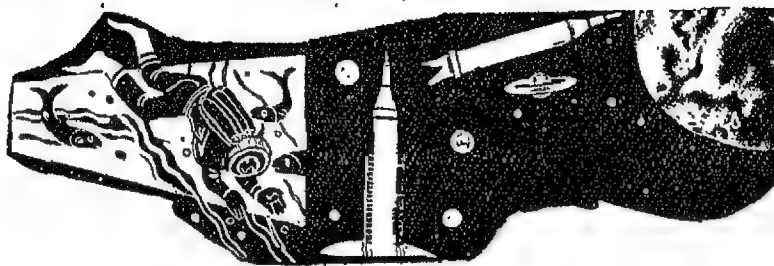
इन प्रारंभिक प्रयासों के बाद से अनेक मानवयुक्त उपग्रह या यान अंतरिक्ष में भेजे गए हैं। इनमें यात्रा करने वाले अंतरिक्ष यात्रियों ने कई करतब दिखलाए हैं। अपनी अंतरिक्ष पोशाकों से लैस यह यात्री यान से बाहर निकल कर अंतरिक्ष में चहलकदमी भी कर चुके हैं। इन्होंने पहले से छोड़े गए अन्य राकेटों को आपस में जोड़ने का भी काम किया है।

आँकड़े व जानकारी एकत्र करने के लिए भेजे जाने वाले यानों को खोजी यान कहा जाता है। यह बाद में मानव की अगली यात्रा का रास्ता बनाते हैं। यह देखते हुए कि राकेटों के अंतरिक्ष की ओर जाने के अल्प समय के भीतर जो प्रगति इस दिशा में हुई है, वह वास्तव में प्रभावकारी है।

१७ सितंबर, १९५९ को भेजा गया रूसी यान ल्यूना-२ चंद्रमा की धरती से टकरा कर नष्ट हो गया था। ल्यूना-३ चंद्रमा के सात हजार किलोमीटर तक नजदीक पहुँच गया था और उसने चंद्रमा के उस भाग के चित्र धरती पर भेजे, जिन्हें हम

कभी देख नहीं पाते हैं। अंतरिक्ष की खोज और आगे बढ़ती गई। १९६२ में अमरीकी यान मैरिनर-२ शुक्र ग्रह की ओर रवाना हुआ। मैरिनर-४ ने १९६५ में अपनी साढ़े सात महीने की यात्रा पूरी करके मंगल ग्रह के निकट से उसके चित्र लिए थे।

एक अन्य उपलब्धि चंद्रमा की धरती पर यान का बिना किसी क्षति के उतरना था। यह उपलब्धि मानव को चंद्रमा पर उतारने की दिशा में एक महान अग्रिम कदम सिद्ध हुई और संभावित उतरने के स्थानों के चित्र प्राप्त किए गए।

तबसे हुई प्रगति आश्चर्यजनक है। अमरीकी अंतरिक्ष यात्री दो बार चंद्रमा की धरती पर उतर कर सुरक्षित धरती पर वापस आ चुके हैं। यह एक ऐसी उपलब्धि है जो केवल सपने अथवा परियों की कहानियों में ही संभव हो सकती है। अगले अध्याय में हम उस यान का वर्णन करेंगे जिसमें इन यात्रियों ने चंद्रमा तक की यात्रा पूरी की थी।

अध्याय ५

यातायात में नए मोड़

मानव की यात्राओं का तीन दिशाओं में बाँटा जा सकता है। पहली दिशा भूमि और समुद्र की सतह, दूसरी वायुमंडल और अंतरिक्ष और तीसरी भूमि एवं समुद्र की गहराइयों की खोज को कहा जा सकता है। पहली दो दिशाओं में हाल की अथवा भविष्य संबंधी प्रगति हुई है, इस पर विचार करने से पूर्व तीसरी दिशा में क्या प्रगति हुई है, यह जान लेना एक दिलचस्प बात होगी।

धरती की गहराइयों की खोज की दिशा में मानव की प्रगति नहीं के बराबर कही जा सकती है। पृथ्वी की त्रिज्या (रेडियस) करीब ६४०० कि०मी० है। मनुष्य द्वारा अब तक निर्मित सबसे गहरी खान ३.२ कि०मी० से भी कम है। इसे समुद्र में बूंद के बराबर ही कहा जाएगा। धरती की गहराइयों में खोज का कोई भी बड़ा कार्य बहुत ही खर्चीला बैठता है। वैज्ञानिक उत्सुकता के अलावा कोई और विशेष लाभ इस समय इतना भारी खर्च उठाने में नहीं है।

फिलहाल, धरती की ऊपरी सतह में छिद्र करके उसके नीचे की पर्त से उसके संबंध का अध्ययन करने के लिए "मोहोल" नामक एक योजना सोची गई थी। धरती की ऊपरी सतह की मोटाई पाँच से बत्तीस कि०मी० के बीच है। जमीन की अपेक्षा समुद्रतल में यह काफी पतली होती है। मोहोल के अंतर्गत समुद्रतल से पाँच कि०मी० अंदर एक छिद्र (बोरिंग) करने का विचार किया गया था। यह सोचा गया था कि इस कार्य से अन्य बातों के अलावा भूकंप और ज्वालामुखियों के कारण का पता चल सकेगा। लेकिन खर्च की विशालता को देखते हुए यह योजना छोड़ दी गई।

इसके विपरीत समुद्र की गहराइयों की खोज संभवतः लाभदायक हो सकती है। समुद्र जीवन एवं खनिजों से भरपूर है। पृथ्वी के लाखों लोगों की खाद्य समस्या दिन प्रतिदिन अत्यंत विषम होती जा रही है। समुद्र से हमें व्यापक पैमाने पर खाद्य सामग्री प्राप्त हो सकती है। अतएव यह सोचना उचित ही होगा कि समय बीतने के साथ ही मानव का झुकाव समुद्र की ओर ज्यादा से ज्यादा होता जाएगा।

हाल के अनुसंधानों से पता चला है कि समुद्र की तलहटी में कच्ची धातुओं के टुकड़े बिखरे हुए पड़े हैं। इन लाखों टन टुकड़ों को सिर्फ बाहर निकालने की ही जरूरत है। समुद्र की तलहटी में हमेशा से ही इन धातुओं का जमाव होता रहा है। यह अनुमान लगाया गया है कि इन धातुओं की प्राप्ति जमीन पर खानें खोद कर करने की अपेक्षा समुद्र की पेंदी से प्राप्त करना कम खर्चीला पड़ेगा। इससे भविष्य में समुद्र की गहराइयों के प्रति लोगों की रुचि भी बढ़ जाएगी।

सागर की गहराइयाँ

प्राचीनकाल में समुद्र में गहरे जाने की कोई कोशिशें नहीं की कई थीं। छिछले स्थानों को छोड़ कर सागर की गहराइयों को नापने की चिंता किसी ने भी नहीं की थी। यह एक समझ में आने वाली बात थी क्योंकि समुद्र में गहरे पैंठना कोई मामूली काम नहीं है।

सागर में गहरे पैठने में दो बड़ी कठिनाइयाँ सामने आती हैं। पहला कठिनाई श्वास लेने की और दूसरी पानी के बढ़ते हुए दबाव की। हम समुद्र के भीतर जितनी गहराई तक जाएँगे उतनी ही हमें साँस लेने में कठिनाई पड़ती जाएगी और गहराई के साथ पानी का दबाव भी बढ़ता जाएगा।

मनुष्य पानी में एक या दो मिनट से ज्यादा देर तक नहीं रह सकता है। अतएव गोताखोरों के लिए विशेष प्रकार के टोप और श्वास पहुँचाने की नालियों की व्यवस्था की गई, लेकिन पन्द्रह मीटर की गहराई के बाद यह सब व्यर्थ सिद्ध हुईं। इस गहराई के आगे पानी का दबाव इतना भारी हो जाता है कि गोताखोरों को उससे सुरक्षित रखने के तरीके खोजने की जरूरत पड़ गई थी। कुछ सौ मीटर और आगे तक जाने में मनुष्य को समर्थ बनाने के लिए गोताखोरों की पोशाकें बनाई गईं। लेकिन वे इतनी भारी और सुरक्षा व्यवस्थाओं से पूर्ण होती थीं कि गोताखोर को अपने अंग हिला सकना मुश्किल पड़ता था।

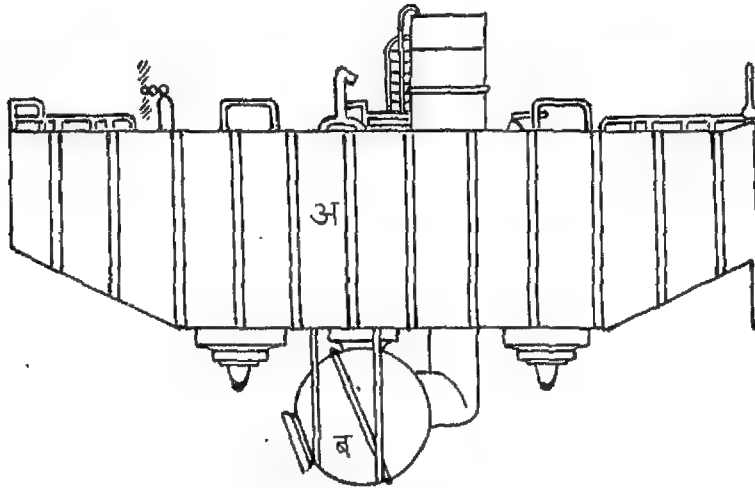
हम पनडुब्बियों का वर्णन पहले ही कर चुके हैं। इसका उद्देश्य समुद्र की गहराई में गोता लगाना नहीं होता है, बल्कि दुश्मन के जलयानों से ओझल रखने के लिए समुद्र के काफी भीतर चलना होता है। पनडुब्बियाँ ऐसी बनाई जाती हैं कि वे नब्बे मीटर तक समुद्र के भीतर जा सकें। लेकिन यह देखते हुए कि समुद्र की गहराई कई मीटर है, यह गहराई कोई अर्थ नहीं रखती है।

सागर की गहराई की खोज में पहली बार वास्तविक प्रगति बेथीस्फेयर द्वारा हुई। यह एक गोलाकार खोल की शक्ल का था और इसकी गोलाई १.४ मीटर की थी। पानी के भारी दबाव से बचने के लिए इस्पात की ३.२५ से०मी० मोटी चादर का इसका आवरण था। इसमें दो छोटी खिड़कियाँ थीं, जिसमें ७.५ से०मी० मोटाई के शीशे लगे हुए थे। एक खिड़की से इसमें बैठा व्यक्ति समुद्र का जायजा लेता था और दूसरी खिड़की से तीव्र प्रकाश चारों ओर फेंका जाता था।

बेथीस्फेयर को एक मोटे तार द्वारा समुद्र में उतारा जाता था। इसके भीतर रखी आक्सीजन की टंकी द्वारा श्वास के लिए हवा की व्यवस्था की गई थी और गंदी हवा

को नष्ट करने के लिए कुछ रसायन भी रखे हुए थे।

इस मशीन के आविष्कारक डा० डैनियल वीब अपने सहयोगी ओरिस बर्टन के साथ १९३४ में समुद्र के भीतर नौ सौ मीटर तक गहराई में उतरे। बाद में १९४९ के दौरान बर्टन बेथीस्फेयर की सहायता से अकेले ही साढ़े तेरह सौ मीटर तक सागर के भीतर गए थे।

सबसे अधिक गहराई तक जाने का सौभाग्य एक अन्य यंत्र बेथीस्केफे द्वारा प्राप्त किया गया है। बेल्जियम के डा० आगस्ट पिकार्ड इस मशीन या यंत्र के अविष्कारक

२७. बेथीस्केफे
अ—धातु का आवरण
ब—गोलाकार मशीन

थे। यह मशीन गोलाकार थी और धातु के एक आवरण से जुड़ी हुई थी। इसके खोल की बाहरी दीवार तेरह से० मी० मोटे इस्पात की बनाई गई थी। इसमें भारी वजन भी

रखा गया था। यंत्र को सागर की सतह पर लाने के लिए वजन बाहर फेंक दिया जाता था।

डा० पिकार्ड के पुत्र जेक्विस पिकार्ड १९६० में समुद्र के अंदर ग्यारह कि०मी० तक गए थे, जो अब तक की सबसे ज्यादा दूरी या गहराई समझी जाती है।

हालाँकि, सागर में खाद्य व संपदा की बहुतायत है किंतु इस बात में संदेह है कि सागर तल की यदा कदा अथवा नियमित यात्रा की कभी जरूरत पड़ेगी। गहराई में चलने वाले जहाज़ आसानी के साथ यंत्रों द्वारा समुद्रतल से किसी भी वस्तु को उठा कर इच्छित स्थान पहुँचाने में स्वयं समर्थ हैं, अतएव अलग से कोशिशें करने की कोई जरूरत नजर नहीं आती है।

पारमाणविक शक्ति

न्यूक्लीयर पावर अथवा पारमाणविक शक्ति आधुनिक युग की सबसे बड़ी उपलब्धि है जिसके दूरगामी परिणाम हो सकते हैं। इसने अविश्वसनीय शक्ति के हथियार प्रदान किए हैं। लेकिन इसका शक्ति के नियंत्रित स्रोत के रूप में उपयोग अभी प्रारंभिक अवस्था में ही है।

यह शक्ति दो तरह से प्राप्त की जाती है। पहला तरीका यूरेनियम और प्लूटोनियम जैसे भारी अणुओं के परमाणुओं में विस्फोट पैदा करने का अथवा उन्हें तोड़ने का है और दूसरा तरीका हल्के परमाणुओं को एकजुट करके भारी अणु तैयार करने का है। हाइड्रोजन बम में हाइड्रोजन अणुओं की एकरूपता (फ्यूजन) से हीलियम के अणु पैदा होते हैं।

दोनों ही तरह की प्रतिक्रियाओं, विभाजन अथवा विस्फोट (फिशन) और एक-जुटता अथवा द्रवत्व (फ्यूजन) द्वारा बहुत बड़ी शक्ति पैदा होती है। द्रवत्व अथवा एकजुटता की प्रक्रिया कई लाख डिग्री के अत्यंत उच्चतम ताप द्वारा उत्पन्न होती है। अतएव इसे परमाणुतापीय (थरमोन्यूक्लीयर) प्रतिक्रिया कहते हैं।

विभाजन अथवा विस्फोट की प्रक्रिया उत्पन्न करने की विधाओं को रियेक्टर (अणु भट्टी) कहते हैं। यह अणुओं की शक्ति का बिजली के रूप में प्रयोग करा सकते

हैं। द्रवत्व अथवा एकजुटता की समस्या पर अभी काबू नहीं पाया जा सका है।

शक्ति उत्पन्न करने के अलावा पारमाणविक प्रतिक्रियाएँ कुछ घातक किरणें व अंश पैदा करते हैं। इन्हें रेडियो सक्रियता कहते हैं। इसीलिए रियेक्टरों अथवा अणुभट्टियों को अत्यंत मोटे कंक्रीट या इस्पात के आवरण से ढँक कर रखना बहुत जरूरी है।

सामान्य यातायात साधनों द्वारा पारमाणविक रियेक्टरों को बाहर ले जाना आसान और खतरे से खाली नहीं है। रियेक्टर व उसके आवरण का वजन कई टन होता है। अतएव रियेक्टर केवल बड़े और भारी वजन वाले वाहनों द्वारा ही ले जाए जा सकते हैं। इसके अलावा दुर्घटनाओं का भी भारी खतरा है। दुर्घटना से रियेक्टर के रेडियो सक्रिय तत्वों के वातावरण में चारों तरफ फैल जाने और एक व्यापक क्षेत्र को प्रभावित करने का खतरा है।

अतएव, यह कोई आश्चर्य की बात नहीं है कि पारमाणविक शक्ति से चालित यातायात का साधन विशाल जलयानों और पनडुब्बियों को बनाया गया है।

अणुशक्ति चालित अमरीकी पनडुब्बी नोटिलस ने अपनी परीक्षण समुद्री यात्रा १९५५ में प्रारंभ की। केवल चार किलोग्राम आणविक ईंधन खर्च करके इसने छियानवे हजार किलोमीटर की यात्रा पूरी की थी। यह पनडुब्बी उत्तरी ध्रुव के नीचे से प्रशांत महासागर से लेकर अतलांतक महासागर तक यात्रा पूरी करके एक इतिहास कायम कर चुकी है। उत्तरी ध्रुव को चारों ओर से घेरने वाली बर्फीली चोटियों के भीतर से इसने यात्रा की थी। इस मार्ग से यूरोप और सुदूर पूर्व की दूरी प्रायः आधी ही रह जाती है। माल ढोकर इस मार्ग पर चलने वाली पनडुब्बियाँ काफी लाभदायक व्यापार का साधन बन सकती हैं।

अन्य अणुचालित जलयान सोवियत रूस का बर्फ विध्वंसक लेनिन है। इसे १९५७ में उतारा गया था। बाद में अणुचालित अमरीकी माल एवं यात्रीवाहक जहाज सावन्नाह प्रकाश में आया। यह सोलह हजार टन वजन वाला एक छोटा जहाज है। लेकिन यह बहुत ही मजबूत और शक्तिशाली है, क्योंकि इसको बर्फीले

ध्रुवीय प्रदेशों से गुजरना पड़ता है। बिना दुबारा ईंधन लिए हुए इसका रियेक्टर अथवा भट्टी पूरे मौसम भर तेंतीस हजार किलोवाट शक्ति पैदा करती है।

ऊपर लिखे कारणों और रियेक्टरों की भारी लागत के कारण परमाणुशक्ति का सामान्य यातायात के लिए उपयोग असंभव है। इसे तो केवल भारी यातायात के लिए ही प्रयोग में लाया जा सकता है। मोटरें, ट्रकें और सामान्य हवाई जहाज शायद ही इसके आवरण या खोल का भार झेल सकें। इसके अलावा ऐसे यातायात साधनों से दुर्घटनाओं का भारी खतरा है।

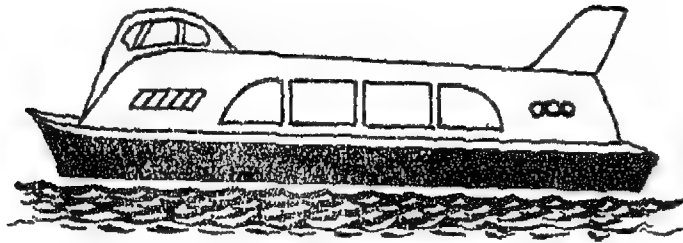
रेलगाड़ियाँ अणुशक्ति का उपयोग अवश्य कर सकती हैं, लेकिन इनके लिए यह जरूरी नहीं कि हर जगह वे रियेक्टरों को लादे फिरा करें। यह सबसे सस्ता होगा यदि उपयोगी स्थानों पर अणुचालित बिजलीघरों की स्थापना की जाय और उनसे उत्पन्न बिजली द्वारा रेलों को चलाया जाय। भाप से बिजली के उपयोग की ओर सुविधाअनुसार रेलें स्वयं ही बढ़ती जा रही हैं और भविष्य में यह मात्रा और ज्यादा होने की आशा है।

संभवत: अणुशक्ति का सबसे अच्छा उपयोग अंतरिक्ष यात्रा में हो सकता है। अंतरिक्ष यात्रा के लिए विशाल यान और विशाल अंतरिक्ष स्टेशनों की जरूरत पड़ती है। इनके लिए बहुत बड़ी शक्ति की आवश्यकता है। आणविक या पारमाणविक शक्ति इनके लिए काफी लाभकर और सस्ती साबित होगी, क्योंकि इसके कारण दुबारा ईंधन लेने की जरूरत नहीं रहेगी। इस क्षेत्र में व्यापक अनुसंधान हो रहे हैं।

अन्य आधुनिक मोड़

यातायात के भविष्य पर संभावित प्रभाव डालने वाला हाल का आविष्कार हवाई कार अथवा होवरक्राफ्ट है। इसे "ग्राउंड इफेक्ट" मशीन भी कहा जाता है। इसका चौड़ा आधार एक औंधी तस्तरी के समान होता है। इसके आधार में बने झरोखों से नीचे की ओर जाने वाले हवा के शक्तिशाली झोंके इसे जमीन की सतह से ऊपर उठा देते हैं। इससे हवा की एक पर्त अथवा गद्दा-सा बिछ जाता है, जो कुछ

सेन्टीमीटर से लेकर करीब एक मीटर तक मोटा होता है। यह मशीन के आकार और शक्ति पर निर्भर है। होवरक्राफ्ट हवा के इसी गद्दे पर तैरता चलता है।

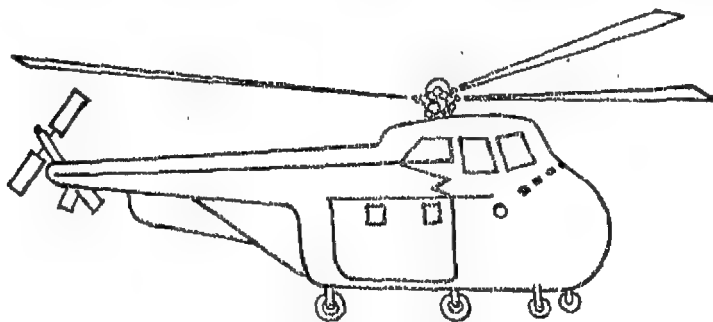
इस तरह के वाहन, एस-आर-एन-१ का वजन ४ टन होता है। इसके इंजनों की शक्ति तीन सौ चालीस किलोवाट होती है। यह अड़तीस सेन्टीमीटर गहरे हवाई गद्दे पर सत्तानबे किलोमीटर प्रति घंटे की रफ्तार से चलता है।

२८. होवरक्राफ्ट

इंगलिश चैनल के आर-पार एक सौ साठ किलोमीटर प्रति घंटे की रफ्तार से चार सौ मुसाफिरों, अस्सी मोटरों व अन्य सामान को ढोने वाले एक होवरक्राफ्ट का प्रारूप तैयार किया जा रहा है।

इस तरह के यान की व्यापक सम्भावनाएँ हैं। इसका धरती से कोई वास्तविक संबंध नहीं होता है और किसी भी प्रकार की सतह पर आसानी से चल सकता है। जब तक कि हवाई गद्दे की मोटाई से ऊँचा कोई अवरोध सामने नहीं आता है, तब तक यह वाहन आसानी के साथ बर्फीले इलाकों, रेगिस्तानों, खेतों, समुद्रों और नदी, झील व नालों पर से आसानी के साथ गुजर सकता है। इसके लिए जमीन पर कोई खर्चीली सड़क बनाने की जरूरत नहीं है और समुद्र में तो यह जलयानों से बखूबी प्रतिद्वंदिता कर सकता है।

एक अन्य महत्त्वपूर्ण आविष्कार जिस पर कि इस समय परीक्षण हो रहे हैं,

सीधे उड़ान भर सकने और उतर सकने वाले विमान हैं। हम हैलीकाप्परों से पहले ही बखूबी परिचित हैं। यह छोटा जहाज होता है, जिसके ऊपर पंख लगे रहते हैं। यह सीधा उड़ान भरने और उतरने के अलावा एक जगह इच्छानुसार स्थिर भी रखा जा सकता है। इसे आसानी के साथ प्रौपेलर के चिपटे हिस्से (ब्लेड) को झुका कर किसी भी तरफ मोड़ा जा सकता है।

जब हैलीकाप्टर का आविष्कार हुआ था, तो उससे बड़ी उम्मीदें बाँधी गई थीं। यह बड़े मकान की छत से उड़ सकता है और उस पर उतर भी सकता है। इसे मकान अथवा इमारत की छतों पर गैरज बना कर रखा भी जा सकता है। इस प्रकार यह किसी अन्य यातायात में रुकावट नहीं बन सकता है। ऐसी हालत में यह स्वाभाविक

२९. हैलीकाप्टर

है कि इसका एक बेहतर निजी वाहन के रूप में स्वागत होता। इसके बड़े पैमाने पर उपयोग से मोटरों की संख्या घट सकती थी और सड़कों पर यातायात की भीड़भाड़ कम की जा सकती थी। लेकिन दुर्भाग्य से यह निर्माण और संचालन पर आने वाले खर्च के कारण काफी महँगा साबित हुआ और कभी लोकप्रिय नहीं बन सका। इसे केवल फौजी व अन्य विशेष कार्यों के लिए ही प्रयोग में लाया जाता है, जहाँ खर्च की कोई चिंता नहीं होती है।

आजकल हैलीकाप्टर के सामने के हिस्से में अतिरिक्त प्रोपेलर या चर्खी लगाने के प्रयास हो रहे हैं। ऊपर के पंखों या चर्खी को पहले ही की तरह उतरने व उड़ान भरने में इस्तेमाल किया जा सकता है और सामने के पंखों का उपयोग जहाज़ के समान सामान्य हवाई हैलीकाप्टर को चलाने में करने की योजना है। वैसे अगर इसे निजी वाहन के रूप मेंलोकप्रिय बनाने के लिए सस्ती लागत का नहीं बनाया जा सकता है, तो भी हवाई बस के रूप में इसकी उपयोगिता लाभकारी सिद्ध हो सकती है। हाल की खबरों के अनुसार सातवें दशक के प्रारंभ के वर्षों के भीतर ही हवाई बसों का उपयोग होने लगेगा। हवाई बसें चल जाने से मौजूदा सड़कों की व्यस्तता और भीड़भाड़ कम की जा सकेगी।

भविष्य की झाँकी

हमारे वर्तमान यातायात का भविष्य क्या होगा ? हमारे सामने अभी तक जो कुछ हुआ है उसकी तस्वीर मौजूद है, लेकिन क्या इससे आगे संभावित घटनाओं की झलक मिल सकेगी ?

जेट हवाई जहाज़ चौबीस सौ किलोमीटर प्रति घंटे से भी ऊपर की रफ्तार के साथ उड़ान भर चुके हैं और इनसे बत्तीस सौ किलोमीटर प्रति घंटे की रफ्तार की आशा बाँधना असंगत नहीं होगा। इसके अर्थ यह हुए कि धरती के सुदूर क्षेत्र की यात्रा में छः घंटे से ज्यादा का समय नहीं लगेगा।

इससे न केवल हवाई यात्रा में क्रांति ही आएगी बल्कि यातायात का सारा ढाँचा ही बदल जाएगा। मुसाफिरों को रास्ते में सोने अथवा खाने की जरूरत नहीं पड़ा करेगी। यहाँ तक कि सुदूर क्षेत्रों की यात्रा बस यात्रा के अलावा और कुछ नहीं रह जाएगी। मुसाफिरों को सिर्फ बैठने की जगह की ही जरूरत पड़ा करेगी। अल्प दूरी की यात्रा वे खड़े रह कर ही तय करना पसंद कर लेंगे। लेकिन यह तभी संभव हो पाएगा, जब जेट हवाई जहाज की यात्रा के किराए की दरें रेल व बसों की दरों के बराबर ले आई जाएँगी।

अगर हवाई जहाजों का किराया रेल व बसों से थोड़ा ही ज्यादा रहेगा, तो भी जनता हवाई यात्रा ही समय बचाने के लिए पसंद करेगी। कोई भी आदमी हवाई यात्रा में खर्च होने वाले कुछ घंटों के मुकाबले जलयानों, रेल व बसों में दिन और हफ्ते लगाना शायद ही पसंद करेगा।

इसलिए जहाँ तक अल्प दूरी या तीन सौ किलोमीटर की दूरी का प्रश्न है, इन्हें बसों, मोटरों और हवाई बसों द्वारा तय किया जा सकेगा। जहाँ सड़कें नहीं हैं अथवा दूरी कम करनी है, वहाँ होवरक्राफ्ट काफी उपयोगी सिद्ध होंगे।

इसका नतीजा यह होगा कि जलयान और रेलों में यातायात कम हो जाएगा। कई रेलों ने इस प्रकार की हवा का रुख पहचान लिया है और वे अब माल ढुलाई की तरफ अपना ध्यान ज्यादा केंद्रित कर रही हैं।

अब हमारे सामने माल ढुलाई संबंधी यातायात का सवाल उठता है। रेलों को ट्रकों और होवरक्राफ्टों से गम्भीर प्रतिद्वंदिता करनी पड़ेगी क्योंकि कम वजन वाला और टूट सकने वाला अथवा जल्द पहुँचाने वाला सामान यह खूबी से ढो सकते हैं। रेलों के पास केवल अपने नियत समय के भीतर सुदूर इलाकों तक भारी सामान पहुँचाने का ही कार्य रह जाएगा।

मालवाहक जलयानों का भविष्य अवश्य अंधकारमय मालूम देता है। बड़े अणुचालित होवरक्राफ्ट जलयानों को भारी क्षति पहुँचाएंगे। एक सौ साठ कि०मी० अथवा इससे ज्यादा प्रति घंटा रफ्तार से यात्रा करने वाले होवरक्राफ्ट तेज से तेज जहाज़ को पछाड़ देंगे। वह उग्र समुद्री लहरों से भी सुरक्षित रहा करेगा, क्योंकि यह सतह से ऊपर यात्रा करता है। डेक पर सामान उतारने-चढ़ाने की मेहनत करने की बजाय होवरक्राफ्टों द्वारा जमीन पर ही सामान उतारा-चढ़ाया जा सकेगा।

इनके अलावा पनडुब्बियाँ भी हैं। हम पहले ही यह दिखा चुके हैं कि कुछ चुने हुए मार्गों पर इनके द्वारा माल भेजना कितना लाभदायक सिद्ध हो सकता है। वे भी समुद्री मौसम की उग्रता से सुरक्षित रह सकती हैं, क्योंकि इनकी यात्रा समुद्र की गहराइयों में होती है।

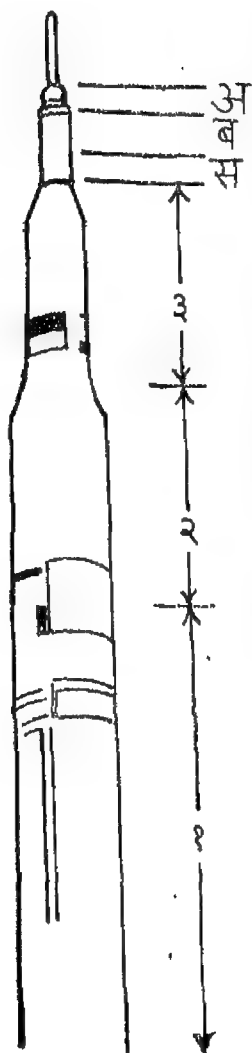
अपना यात्री यातायात जेटों और हवाई बसों व माल संबंधी यातायात होवर-क्राफ्टों व पनडुब्बियों के हाथ गँवाने के बाद जलयानों के पास ढोने के लिए शायद ही कुछ माल बच सके। इस प्रकार उन्हें अपना अस्तित्व बनाए रखने के लिए बड़ा ही कठिन संघर्ष करना पड़ेगा। वे केवल पर्यटन के स्थानों तक लोगों को ऐशो-आराम के साथ ले जा सकेंगे। लेकिन इस क्षेत्र में भी होवरक्राफ्ट पुनः एक भयंकर प्रतिद्वंद्वी साबित होगा, क्योंकि यह उन स्थानों तक पहुँच सकेगा, जहाँ जहाजों का जाना असंभव है।

मोटरकारों का प्रचलन बना रहेगा, क्योंकि वर्तमान सड़कें भी बनी रहेंगी और फिर लोग भी इनके बिना नहीं रह सकेंगे। भीड़भाड़ यातायात का जमाव और दुर्घटनाएँ बढ़ेंगी। लेकिन काफी कुछ भार हवाई बसों और ऊपर चलने वाली छोटी रेलगाड़ियों से कम किया जा सकेगा। पैदल चलने वालों के लिए इमारतों की छतों की ऊँचाई के बराबर फुटपाथों पर चलना पड़ेगा, जिससे कि नीचे सड़कें यातायात के लिए खाली रह सकें। अत्यंत विषम स्थिति में शहरों की सीमा या घनी आबादी वाले क्षेत्रों में निजी मोटरें रखने पर प्रतिबंध भी लगाया जा सकता है।

अंतरिक्ष यात्रा में प्रगति

हम इस पुस्तक की सीमाओं के भीतर अंतरिक्ष यात्रा की संभावनाओं का ब्यौरा नहीं दे सकते हैं, क्योंकि हमारा अंतरिक्ष अभियान अभी शुरू ही हुआ है। अभी तो इस क्षेत्र में हर चीज संभव मालूम देती है। अधिकतर संभावनाएँ अंतरिक्ष की खोज के निष्कर्षों पर निर्भर करती हैं। अचानक प्राप्त कोई खोज अथवा अनुभव हमारे भविष्य के प्रयासों को पहले से अनुमान न लगाए गए रास्ते पर मोड़ सकता है।

इसलिए हम अपनी चर्चा को इस दिशा में अब तक जो हो चुका है उसकी जानकारी व वर्तमान प्रगति से आगे क्या संभावित लगता है के दायरे में सीमित रखेंगे।

चंद्रमा पर अवतरण—मानव चंद्रमा पर उतर चुका है, जिसकी दूरी धरती से

चार लाख किलोमीटर है। इसका मतलब यह है कि यात्रा के लिए अंतरिक्ष यान न केवल हर प्रकार से ठीक था बल्कि अंतरिक्ष उड़ान की कई समस्याएँ भी बखूबी हल कर ली गई हैं। इनमें से कुछ समस्याओं की चर्चा हम पहले ही कर चुके हैं।

चंद्रमा पर उतरने के लिए इस्तेमाल किए गए अपोलो यान में उसे प्रक्षेपित (बूस्ट) करने वाले राकेट के अलावा तीन हिस्से थे। पहले का नाम निर्देशक कक्ष (कमांड माड्यूल), दूसरे का सेवा कक्ष (सर्विस माड्यूल) और तीसरे का चंद्र कक्ष (लूनार माड्यूल) था। चंद्र यात्रा पर तीन यात्री रवाना हो जाते हैं। जिस भाग में वे बैठते हैं उसे कमांड माड्यूल या निदेशक कक्ष कहते हैं। सेवा कक्ष, जिसमें अतिरिक्त ईंधन, बिजली व्यवस्था व यात्रा के लिए अन्य जरूरी सामान होता है, निर्देशक कक्ष से जुड़ा रहता है। चंद्र कक्ष निर्देशक कक्ष की नोक से जुड़ा

३०. सैटर्न ५ राकेट सहित अपोलो यान

अ—निदेशक कक्ष : पृथ्वी से जाकर चन्द्रमा की परिक्रमा करने तक की यात्रा तथा वापसी के लिए।

ब—सेवा कक्ष : जरूरी सामान तथा ईंधन ले जाने के लिए।

स—चंद्र कक्ष : चंद्र तल पर उतरने तथा निदेशक कक्ष तक लौटने के लिए।

रहता है और हल्का व मकड़े की शक्ल का होता है। चंद्रमा की धरती पर यही उतरता है।

चंद्रमा की यात्रा कई दौरों में संपन्न होती है। विशालकाय सेटर्न राकेट इसे पृथ्वी की कक्षा तक प्रक्षेपित कर देता है। इस समय तक राकेट के निचले हिस्से अलग हो चुकते हैं। परिक्रमा के दौरान अंतरिक्ष यात्री सारे यंत्रों व व्यवस्थाओं की जाँच भली प्रकार कर लेते हैं और इस बात के लिए आश्वस्त हो जाते हैं कि यान अगली यात्रा के लिए तैयार है। सेटर्न राकेट का सबसे अगला हिस्सा जा अब तक अलग नहीं होता है, चंद्रमा की तरफ यान को भेजने के लिए चालू किया जाता है। यान इस तरह निर्देशित रहता है कि वह सीधा चंद्रमा की ओर ही जाता है।

तीन में से दो यात्री चंद्रकक्ष में प्रविष्ट हो जाते हैं और यह कक्ष यान से अलग होकर चंद्रमा पर उतरता है। इसमें छोटे-छोटे राकेट लगे होते हैं जिन्हें कक्ष को धीरे-धीरे सतह पर उतारने और चंद्रमा का चक्कर लगा रहे मूल यान से जुड़ने के लिए चंद्रकक्ष को पुनः ऊपर उठाने के लिए काम में लाया जाता है।

सुरक्षापूर्वक उतरने के बाद, थोड़ी देर आराम करके चंद्रयात्री बारी-बारी से अपने कक्ष से बाहर आकर चंद्रमा की धरती पर पैर रखते हैं। वे अंतरिक्ष पोशाकें पहनते हैं और साँस लेने के लिए उनके पास आक्सीजन होती है, जो चंद्रमा के वायु रहित वातावरण के लिए बहुत जरूरी है। यात्री चंद्रमा पर अपने को बहुत ही हल्का महसूस करते हैं क्योंकि चंद्रमा धरती की अपेक्षा ज्यादा छोटा है और उसकी गुरुत्वाकर्षण शक्ति भी कम है। अपनी भारी पोशाकों के बावजूद वे चंद्रमा की धरती पर आसानी के साथ उछल-कूद सकते हैं।

यात्री चंद्रमा पर अपना समय चलने, धूल व चट्टानों के नमूने एकत्र करने में बिताते हैं। वे चंद्रमा की धरती पर ऐसे यंत्र भी रखते हैं जो रेडियो संकेतों द्वारा पृथ्वी तक विभिन्न जानकारी चंद्रमा के बारे में भेजते रहते हैं। इस प्रकार अंतरिक्ष यात्रियों की वापसी के बाद भी वैज्ञानिक धरती से चंद्रमा के साथ अपना संपर्क बनाए रख सकते हैं।

अपोलो-११ के यात्री चंद्रमा पर पहुँचने वाले पहले मानव थे। वे अपने साथ एक बोर्ड तख्ती भी ले गए थे जिसे वे चंद्रमा की धरती पर छोड़ आए थे। इस छोटे से बोर्ड पर यह इबारत लिखी हुई थी—

यहाँ पृथ्वी नामक ग्रह से आए मानवों ने
पहली बार चंद्रमा पर कदम रखा है—जुलाई १६६६ ई०
हम समस्त मानवता के लिए शांति की कामना लेकर आए हैं।

इस इबारत के नीचे अंतरिक्ष यात्री नील ए, आर्मस्ट्रांग, माईकेल कालिंस, एड-विन ई आल्ड्रिन जूनियर के अलावा अमरीकी प्रेसीडेंट रिचार्ड निक्सन के हस्ताक्षर थे।

अपोलो-११, २१ जुलाई, १६६६ में चंद्रमा पर उतरा था। चंद्रमा पर अपने उद्देश्य की पूर्ति के बाद यात्री अपने चंद्रकक्ष में पुनः आ गए और उसे चंद्रमा की कक्षा में चक्कर लगा रहे मूल यान से जुड़ने के लिए चालू कर दिया। वे निर्देशक कक्ष के साथ जुड़ कर वापस धरती पर सुरक्षा पूर्वक आ गए।

चंद्रमा की अगली यात्रा अपोलो-१२ द्वारा की गई। यह अपोलो-११ के उतरने के स्थान "शांति के समुद्र" से प्रायः साढ़े चौदह सौ किलोमीटर दूर नए स्थान "तूफानों के समुद्र" के पास उतरा था। इसमें चार्ल्स कोनरैड जूनियर, रिचार्ड गोर्डन और एलन बीन ने यात्रा की थी। धूल और चट्टानों के नमूनों के अलावा वे अपने साथ इकतीस माह पूर्व छोड़े गए मानवरहित यान के कुछ अवशेष भी लाए थे।

अपोलो-१३ चंद्रयात्रा में असफल रहा, क्योंकि इसके सेवा कक्ष को रास्ते में ही क्षति पहुँच गयी थी अतएव वह चंद्रमा पर उतरने बिना ही वापस धरती पर आ गया था।

अपोलो १४ तथा १५ की चंद्र यात्राएँ सफल रहीं। अपोलो-१५ इस कारण उल्लेखनीय है क्योंकि यह अपने साथ चंद्र यात्रियों को चंद्रतल पर घुमाने के लिए एक गाड़ी भी ले गया था। यह गाड़ी बैटरी चालित थी और चंद्रयान में एक ओर रखी हुई थी।

३१ जुलाई १६७१ को चंद्रयात्री डेविड आर० स्काट तथा जेम्स वी० इरविन

ने प्रथम बार चंद्रतल पर गाड़ी में सवारी की। गाड़ी की औसत चाल आठ किलो मीटर प्रति घंटा थी जो समतल चाल तक पहुँच गई थी।

अगले दो दिनों में भी चंद्र यात्रियों ने गाड़ी में बैठ कर चंद्रतल की सैर की। उसके बाद वे वापस मूल यान में लौट आए जो चंद्रमा के चक्कर लगा रहा था। अपने १२ दिनों के सफल अभियान के चंद्र यात्री पृथ्वी पर सकुशल लौट आए।

अन्य ग्रहों की यात्रा—यही तरीका हमारे सबसे नजदीक के ग्रह मंगल और शुक्र पर उतरने के लिए अपनाया जा सकता है। राकेट वहाँ पर बहुमूल्य ईंधन को जलाए बिना उतर सकता है और वायुमंडल-अवरोध का उपयोग ब्रेक के रूप में कर सकता है। मंगल का वायु मंडल बहुत ही पतला है। अगर जरूरत पड़ी तो राकेट अपनी कुछ शक्ति का उपयोग सुरक्षापूर्वक उतरने में कर सकता है।

सुदूर के बाकी ग्रह जीवन के लिए कतई घातक हैं। विशेषतौर पर विशाल-काय जुपिटर, सैटर्न, यूरैनस और नेपच्यून ग्रह विषैली गैसों के भारी आवरण से ढके हुए हैं। यह संभव है कि यात्री इन ग्रहों के कुछ बड़े उपग्रहों पर उतर कर खोजी यंत्रों के सहारे से जानकारी प्राप्त करें।

इन यात्राओं से मनुष्य को होने वाली उपलब्धि संभव है कि उसे सूर्य के उस पार जाने की प्रेरणा दे या न दे। लेकिन मानव लालच में न भी आए तो भी देर सवेर उसकी वैज्ञानिक उत्सुकता और जोखिम उठाने की भावना उस पर जरूर हावी होगी ऐसा हमें विश्वास है। लंबी दूरियाँ और उनमें निहित समस्याएँ बड़ी व्यापक और और प्रभावकारी हैं। सूर्य पृथ्वी से पंद्रह करोड़ किलोमीटर (नौ करोड़ तीस लाख मील) दूर है। अगला सबसे नजदीकी नक्षत्र प्रोक्जीमा सेंटरी चार शंख किलोमीटर दूर है। इन तक अगर दस लाख मील प्रति घंटे की रफ्तार से कोई यान भेजा भी जाए तो उसे पहुँचने में तीन हजार वर्ष लग जाएँगे।

जरूरी तेज गति प्राप्त करने के लिए एक आणविक और विद्युत मिश्रित ईंधन विकसित किया जा रहा है। इस पर भी अंतरिक्ष में गहराई से प्रविष्ट होने से पहले अंतरिक्ष यात्रा के प्रति एक बिल्कुल नया दृष्टिकोण अपनाना पड़ेगा। इस समय

यह अनुमान लगाना व्यर्थ ही होगा कि समय आने पर अंतरग्रहीय यात्रा के लिए नए अविष्कार कौन-सा द्वार खोलेंगे ।

ग्रहों, नक्षत्रों और आकाश गंगाओं का अध्ययन वास्तव में आकर्षक विषय है । हम ग्रहों पर पहुँचने अथवा उनके और भी आगे जाने पर क्या पाने की उम्मीद रखते हैं ? क्या हम दूसरी दुनियाँ में अपनी ही तरह के जीव पाने की आशा लगाए हैं ?

कहाँ तक, कितना तेज और कब ?

प्राचीन काल से लेकर आगे जहाँ तक हम कल्पना कर सकते हैं, यातायात में हुई प्रगति पर संक्षिप्त दृष्टि डाल लेना असंगत न होगा ।

प्राचीन मानव ने तीन से छः किलोमीटर प्रतिघंटे की रफ्तार से चलना शुरू किया था । यह उसकी सबसे तेज चाल थी । इस गति से उसके लिए लंबी यात्राएँ करना संभव नहीं था । सबसे लंबी यात्राएँ शायद वह शिकार के लिए ही करता होगा, जो उसे उसके निवास स्थान से पंद्रह से पच्चीस किलोमीटर तक ही दूर ले जाती होगी । अगर इतनी दूर जाने पर भी शिकार नहीं मिल पाता होगा तो वह कोई बेहतर स्थान खोज लेता होगा । उसे ज्यादा लंबी यात्राएँ करने की बजाए इसमें ज्यादा सहूलियत महसूस हुई होगी ।

यह हालत हजारों वर्षों तक ऐसी ही बनी रही । तब पशुओं का पाला जाना और उन पर काबू पाना शुरू किया गया । इन उपायों से मानव की यात्रा की गति बढ़ कर पंद्रह किलोमीटर प्रति घंटा हो गई । लंबी यात्राओं पर यह संदेह था कि मानव और पशु दोनों ही क्या इससे ज्यादा गति बर्दाश्त कर सकते थे । इस समय तक मानव खेती करने लगा था । उसकी सबसे लंबी यात्राएँ संभवतः अन्य समुदायों के साथ व्यापार के सिलसिले में ही होती होंगी । इसके लिए उसे सौ किलोमीटर से ज्यादा जाने की जरूरत नहीं पड़ती होगी ।

बेशक, उस समय मार्कोपोलो से जैसे भी लोग थे, जिन्होंने एक ही प्रयास में हजारों मील की यात्राएँ कर डाली थीं । लेकिन उन्हें अपनी प्रत्येक यात्रा में कई वर्ष

लगे थे। लेकिन ऐसे लोग नियम नहीं एक अपवाद थे। इसी श्रेणी में वे साहसी नाविक भी आते हैं जिन्होंने नए मार्गों की खोज में हजारों किलोमीटर की यात्राएँ की थीं। यह स्वाभाविक ही था कि और लोग भी उनका अनुसरण करते।

भाप, पेट्रोल और डीजल चालित इंजनों का अविष्कार होने तक मानव सभ्यता की इस पूरी अवधि में उसके यातायात की गति में कोई ज्यादा वृद्धि नहीं हुई थी। नए आविष्कारों के साथ ही गति में एकदम से तेजी आई और वह डेढ़ सौ किलोमीटर प्रति घंटा तक पहुँच गई। अंतर महाद्वीपीय व्यापार भी होने लगा।

जेटों और हवाई जहाजों ने इस गति को सैंकड़ों मील प्रति घंटे तक और बढ़ा दिया और मानव एक महाद्वीप से दूसरे महाद्वीप की यात्रा स्वच्छंदतापूर्वक करने लगा।

गति बढ़ने के साथ ही जेट ध्वनि से भी तेज गति से चलने लगे। आवाज या ध्वनि की रफ्तार बारह सौ किलोमीटर प्रति घंटा है। इससे भी तेज गति को सुपरसानिक या ध्वनि से भी ज्यादा वेग से चलना कहा जाता है।

राकेटचालित कृत्रिम उपग्रह तीस हजार किलोमीटर प्रति घंटे की गति को पार करगए हैं और कुल नब्बे मिनट में पृथ्वी की परिक्रमा पूरी कर लेते हैं। चंद्रमा की यात्रा में यानों की गति इससे भी काफी ज्यादा थी। वास्तव में पिछले पचास वर्षों के भीतर हुई प्रगति बहुत ही आश्चर्यजनक है।

जब मानव अंतरग्रहीय अंतरिक्षों की खोज करेंगे तो गति के उच्चतम से उच्चतम मापदंड कायम होने लगेंगे। उसे अन्य सूदूर ग्रहों तक पहुँचने के लिए करोड़ों मील प्रतिघंटे की रफ्तार रखनी पड़ेगी।

कब हम इन आश्चर्यों की उम्मीद रखें ?

हम यह देख ही चुके हैं कि मानव चंद्रमा तक पहुँच गया हैं, जो धरती से चार लाख किलोमीटर दूर है। यदि वह और आगे जाना चाहता है तो उसको कम से कम नजदीक के ग्रहों तक की यात्रा के लिए यात्रा का वही साधन अपनाना होगा। लेकिन क्या उसे और आगे जाने की लालसा होगी ?

भविष्य में उन्नति तीन मुख्य बातों पर निर्भर रहेगी। मानव शक्ति, तकनीकी जानकारी और धन। चंद्रमा की यात्रा ने यह दिखला दिया है कि क्षमता पर संभव कार्यों के लिए आदमियों की कमी नहीं रहेगी। पहले भी वैज्ञानिकों ने कई समस्याएँ हल की हैं और उनसे यह उम्मीद की जा सकती है कि वे आगे भी आने वाली समस्याओं को हल करेंगे। जहाँ तक धन का सवाल है, जबसे अंतरिक्ष की खोज सामरिक महत्व और प्रतिष्ठा का प्रश्न बन गई है, तब से रुपया पानी की तरह बहाया जाने लगा है। आखिर यह स्थिति कब तक जारी रहेगी ?

हमें यह भली प्रकार ध्यान रखना होगा कि अंतरिक्ष यात्रा में बहुत धन खर्च होता है। कहा जाता है कि अमरीका अपने अंतरिक्ष कार्यक्रमों पर अबतक अरबों डालर खर्च कर चुका है।

अब जबकि फौजी आवश्यकता व प्रतिष्ठा कोई अर्थ नहीं रखती है, धन का व्यय अन्य बातों की अपेक्षा और अंतरिक्ष की होड़ को नियंत्रण में रख सकेगा।

अंतरिक्ष यात्राएँ इंद्रधनुष के समान रंगीन और चमकदार हो सकती हैं, लेकिन उन्हें इसके लिए धन का भी विचार ध्यान में रखना होगा।

यह भी संभव है कि फौजी आवश्यकता का मार्ग अन्य दिशाओं की तरफ मुड़ जाए। मानव को यह सोचना होगा कि वह एक दूसरा अंतरिक्ष कार्यक्रम चाहता है या एक और विश्व-युद्ध। निःसंदेह वह दोनों चीजों को एक साथ लेकर नहीं चल सकता है।

THE PSYCHIC METHOD

In the course of this lengthy and detailed series of psychic tests the Panel had ample opportunity for watching comparisons of *method*, as well as differences in *result*

It is felt that a close comparison of the verbatim notes on two parallel sessions will make interesting reading to the student of parapsychology, and for this purpose a comparison will be made between sessions given by two outstanding British women "sensitives", Estelle Roberts and Eileen Blashke They are leading figures in the Spiritualist movement and as their engagements hardly ever make it possible for them to appear together at public seances, when comparison of method might be made directly, the following comparisons will be all the more of value to followers of this branch of psychic work

Estelle Roberts (in private life Mrs Chown) gave a test before the Panel on 27th September, 1949, and agreed to conduct the seance in the boardroom of a business house in central London Some psychic workers had ridiculed the suggestion that all the tests should be held in conventional Spiritualist centres, and put forward the view-point that an experienced medium like Estelle Roberts, who holds large audiences of many thousands in such settings as the Royal Albert Hall, would not in the least be disturbed by the non-spiritual etheric atmosphere of an office or industrial centre Mrs Roberts accepted this challenge, but on inspecting the room and hearing the rumble of machinery near-by expressed the view that it might militate against a good seance In fairness to her it was suggested that a second session should be held at a more suitable centre to be named by her, but this she found it impossible to arrange owing to her lengthy list of public engagements.

When she appeared before the Panel her commanding presence and personal magnetism quickly held her audience By way of introducing herself to the friends present in the circle, she said "I was born a medium I have been doing public work for twenty-eight years, and in connection with my work with the Press I have always

found I have had fair play, right from the time when a national Sunday paper used to bring test cases to my home"

[*After a moment the medium walked round the circle and spoke to a sitter*]: "You have a sister on the other side—standing there She passed when she was quite a little girl. I have been watching her She asks me to give you her love and to tell you she is happy. There is also a young airman who passed over very quickly in war conditions—his plane dived into the Channel The girl is an advanced spirit and is trying to help him He says he was about twenty-three or twenty-four years of age when he passed" The medium thought he was related to Mrs Ainsworth He was speaking of Ken, Willy or Billy . [*These names were accepted by Lady Anderson*]

"This airman brought with him a lady in Red Cross uniform, also a John who passed very quickly He mentioned an anniversary in August [*Lady Anderson's birthday*] An Elizabeth came—connected with father's side of the family? Aunt Lizzie She is speaking of Charles whom she has met in the spirit world Also Edward or Edwin, called Ted, connected with mother A little boy—Peter—passed when a baby, and a lady about seventy years of age; she is with John and they send their love"

Estelle Roberts said a brother was calling for a doctor present He passed many years ago He said "There are three of us here", and that he had been close for a long time He brought an anniversary in the month of November, and the surgeon said his own birthday is in November The spirit was also bringing Mary, and Williams [*neither name recognized*] and the initial "H" He said he had met a little girl who passed with the condition of meningitis or some other head trouble.

"Somebody who passed over six to twelve months ago with a seizure, about the age of seventy, brought the initial 'A'—perhaps for Alfred.

"He asks if his brother can be told of his return . . Speaks of Charles, George, Arthur, Frederick, Ann or Annie, and the initials B. L or L B . [*Dr Bendit cut in to say that these were his initials, but the medium did not respond*] He brought with him a gentleman who passed in very tragic circumstances He committed suicide —wants someone with the initial 'J'. . . "

[*The medium then said that this kind of work needs a quiet vibration, and the buzz of the near-by machinery was breaking into the messages She could do no more, as the vibrations were not good The Panel then put certain questions to the medium.*]

SURGEON How do you know you were born psychic?

MEDIUM I am sixty-one years of age, and have done twenty-eight years of public work I have seen spirits since the age of six, and I used to think I had something wrong with me, but I know now that it is a matter of psychic reaction

DR BENDIT· Have you seen fairies?

MEDIUM I have actually seen fairies—little gnomes—when I worked with Sir Arthur Conan Doyle. I was the medium used when Mona Tinsley's body was missing I got the complete plan of where Nodder had taken the child I showed the Chief Constable where the body was in the water He admitted later in public that short of diving into the lake I couldn't have known that.

CANON KNIGHT Are we to assume that all problems are solved from the other side?

MEDIUM No, sir That world is only one degree better than this Sir Oliver Lodge's son, Raymond, was quite correct when he said they have whisky and cigars there! It is all a matter of evolution of the *mind*

PANEL'S REPORTS

LORD AMWELL It is difficult to understand why a medium used to the excitement of vast Royal Albert Hall meetings, and whose controls constantly have to contend with the vibratory acoustics of that building, should find a slight throb of quite distant machinery fatal to the "vibrations" Mrs Roberts gave (perhaps unwittingly) the impression of "fishing" It may be the result of habit; I do not know She is very experienced and her undoubted psychic powers may be equal to the tremendous demand made upon them It is a pity that such powers prove so tantalizing when invoked by those who are used to exact methods of investigation.

Mrs Roberts may not have known where I was sitting, but she could easily have known that I was present I was

evidently expected to respond to the name of Frederick and "An or Am" The spirit described at first fitted a recollection reasonably well but I did not respond merely to be cross-questioned when the only reason for communication was quite definite if there was anything veridical at all I may have been wrong, unhelpful, anti, and all that, but I preferred to wait. As usual, no response, nothing doing The "message" meandered off into a mass of vagueness and insignificance The vibrations were not good !

DR BENDIT · She was working under somewhat difficult conditions, so all I say is conditioned by this fact She showed no evidence of any kind of guidance or control Her behaviour was that of a person of highly nervous temperament

There may have been some evidence of extra-sensory perception of a telepathic kind, in that she picked up the existence of brothers or sisters of various people present without knowing of them by ordinary means But there was a vast amount of pure guesswork which led nowhere, and when it was clear that nobody would pick up the lead she gave, this line was dropped I myself gave her a lead over the initials "B L", pointing out that they were two of mine in reverse, but she did not, as I had hoped, follow this up

She was also very expert in obtaining information from those present, either by leading questions or indirectly, by making statements which would evoke agreement or denial and tell her something she wanted to know. Her patter was characteristic and clever, filling-in time. But when she said "I hear names" and then gave those names, these were always common ones It is a safe bet that everybody in the room would know at least one George or John or William This does not suggest any attempt at fraud and I am reasonably satisfied that it was done unconsciously

There was no evidence whatever of discarnate "spirits" or of survival after death, though strong suggestion was put forward by assertions that "There is a spirit ."

MRS. HALDANE This was an inconclusive sitting as Mrs Roberts found the surroundings and conditions hostile to obtaining results I await a second sitting

CANON KNIGHT There was full light, and no suggestion of any kind of deceit or trickery Unfortunately

there was noise from the machinery and also from the street Mrs Estelle Roberts is a famous sensitive of personal charm and with no suggestion of anything peculiar or uncanny She walked about the room speaking to people, claiming to see near them persons from the life beyond death

There were some very interesting results in some cases She indicated names or dates which meant something to some members She made one or two references to names and events which I might have recognized, or they might have been coincidence She did not link me with the names, so that I did not feel called upon to say that I saw a possible connection. There were several obvious mistakes and complete blanks I felt that Mrs Roberts was a most sensitive person, and that she might have possessed a faculty of picking up what was in people's minds But it would not for me be proof of survival

L A G STRONG On this occasion the medium deserved all sympathy for having to work in circumstances highly unfavourable to the special type of concentration which she obviously needs In spite of these difficulties, she managed to produce a few examples of what in my judgment was common-or-garden telepathy After a sighting shot or two, she sharply avoided the one person in the room whose sensitivity probably exceeds her own, and picked out two sitters with some degree of paranormal faculty With one of these she scored her best success, telling him (roughly) the age of a brother who had died, the initial of the brother's Christian name, and referring to an anniversary in November After this sequence of hits she began to miss again

I was unfavourably impressed with her patter and with a certain element of showmanship about her performance, but fully believe that, in suitable conditions and with fewer sitters, she could produce an impressive series of accurate pronouncements on matter already in the sitter's mind I see nothing whatever in her performance to suggest the work of any outside agency

EILEEN BLASCHKE

THE next in this series of test comparison seances was given by Eileen Blaschke on 8th November, 1949 It is sometimes held against those engaged in psychic and similar research work that they lose interest in themselves, and that, like academic men of science, their valuation of the Material is lost in their pursuit of the Mind

Eileen Blaschke, however, is a most attractive young woman who, until she engages one in conversation, gives at first little hint of her deep and sincere interest in the studious psychic research Petite, with auburn waved hair, she wore a trim black suit with a pink-and-blue organdie blouse, and high-heeled double-anklestrap shoes

Immediately she began speaking with individual members of the Panel, her rather tense nervous condition was noted, and her air of extreme femininity could hardly conceal what might be constructed as a fount of psychic energy eager to be unlashed

She said at once "I am not infallible, I can only give what the other side wish me to give With all the kindness in the world there is a feeling of tenseness which unconsciously puts up a barrier"

Commenting on the number of men present, the medium asked them to space themselves out more evenly among the woman guests present The Lord's Prayer was then recited, and Eileen Blaschke turned to Dr Weatherhead (who was not wearing a clerical collar, nor had he been introduced by name) I get clergymen connected with you I feel also you would have known someone in country conditions You have a father in spirit

DR WEATHERHEAD Yes, that is so

MEDIUM He would not have understood psychic unfoldment. He was very much of the orthodox faith I am linking with a family of a fine type They believed and held strongly to their beliefs in the orthodox point of view I get names of Herbert and John

DR WEATHERHEAD · I don't know the names

MEDIUM You know, you are most difficult! Do you know Grace, Alice and Elizabeth? Elizabeth would have known you in your younger years, she would have met you in Germany I get a nice kindly condition with her. You have a very analytical mind Do you know a surgeon?

DR WEATHERHEAD Yes, many

MEDIUM Can you understand why I get a discussion over some psychic healing? I want to speak of people interested in Christian Science, and I still hear the name of Herbert It is going to mean something to you later if it does not already do so He is a man who is well known Do you know Scotland?

DR WEATHERHEAD Yes

MEDIUM Do you understand Andrews, or Andrew?

DR WEATHERHEAD Andrew, yes

MEDIUM I want to link strongly with Scotland And I get church and chapel links at some time .

[*The medium suddenly turned to the well-known actor Harry Green, who was a guest of the Panel, and asked him if he played the violin The reply was in the negative*]

MEDIUM [*to Lord Amwell*] Do you belong to a musicians' club?

LORD AMWELL No

MEDIUM What would you call it, then? A College of Music—a School of Music?

LORD AMWELL I would rather *you* tell me if you can

MEDIUM Can you place the North? I want to talk to you going back in your young days, which were not too easy Your mother links closely here I am hearing the name of Sarah—I will tell you that you know Sarah I have musicians round you—is it an orchestra?

LORD AMWELL Yes, that kind of thing

MEDIUM But it is not modern music, it is old music There are also people here connected with the stage Your father is here, also Was there not a tragedy in your life that has left its mark on your aura? It has left a feeling of loneliness A young man comes to you from spirit He passed in the First World War He doesn't look much more than twenty-three or twenty-four He has been to you before

LORD AMWELL· No

MEDIUM. Well, he tried to come I feel you have been seeking for some time

LORD AMWELL· Many years ago, for a time

MEDIUM· This young man is connected with soldier's uniform There is a portrait near you or in your possession He has tried to manifest to you It's funny, I feel I am up

against some barrier with regard to this boy. Can you understand Jack?

LORD AMWELL No

MEDIUM. Well, I feel he is bringing Jack with him, and I want the Royal Artillery. I feel I am on new ground here—that I am contacting someone who used to say that when we were dead we were done for! There is a psychic power within you, you have had many experiences of a psychic nature that have left their mark on you

LORD AMWELL I developed my own mediumship, once.

MEDIUM: I get Elizabeth, Polly, and Emma—she was linked with Polly on mother's side of the family Also there is someone who lost an arm, the left arm Not in the family. I get someone who either lost an arm, or had a withered one Can you place the name of Will?

LORD AMWELL I don't know, there may have been one

MEDIUM Well, he had something wrong with his left arm He has not been before, because the young man is bringing him I feel you burn the candle at both ends, or you have done so in the past You go to bed too late and get up too early You have had war service yourself?

LORD AMWELL Yes

MEDIUM I get the name of Newton or Newman Do you know a policeman?

LORD AMWELL I hope that's nothing to do with burning the candle at both ends!

MEDIUM [*to Mrs Bendit*]: I feel you should be terribly interested in colour and designing, including your own dress designing

MRS BENDIT: I am too busy for that!

MEDIUM Well, I feel you could design your own dresses Do you know the name of Muriel?

MRS BENDIT. Yes, on this side

MEDIUM Also I feel there is someone very interested in theosophy I feel there are discussions about it I have three people from spirit One is a very young lady, not more than twenty-three or twenty-four, who has been over many years Do you know Mary and Rose?

MRS BENDIT: I know Mary, but not Rose.

MEDIUM There is a gentleman here who passed in the prime of life He was between forty and fifty. I feel he passed very suddenly with heart trouble. Do you know the

name of Arthur—in the family? Do you understand why I want to talk of a tragedy—a drowning?

MRS BENDIT No, I can't understand that It was not in the family

MEDIUM Do you write at all? I see books and papers all around you I get that drowning condition again—someone was drowned in the *Lusitania*

MRS BENDIT No . Nobody I know

MEDIUM I feel you have been receiving treatment or healing from an osteopath I want to use my fingers down your spine Someone has been very clever with manipulation. You have either been under an osteopath or a healer There is a lot of sadness with you There have been, in your earth life, three very big incidents (I call them incidents for want of a better word) that have meant a great deal to you I get your mother in the spirit world, and I still get a gentleman who passed very quickly Do you know Winifred or Winnie? Also the name Sand or Sands comes, and Olga?

MRS BENDIT No

MEDIUM. Well, someone talks of Olga and Egypt.

MEDIUM [*to the surgeon*] Do you know anything about the Nile? I feel someone was interested in excavations, opening tombs, or something like that

SURGEON I was there But it was all on the surface

MEDIUM I also get China very strongly with you

SURGEON I have been there, too

MEDIUM: I still get Olga, isn't it strange? It must be one of your girl-friends you can't remember! Do you know, a great number of people are terribly interested in your investigations—they are "tickled to death" about it Do you know why?

SURGEON. I don't know why they should be

MEDIUM: Well, I feel it's rather tickled you a little! Can you place America?

SURGEON Well, I have been there

MEDIUM You will go again I get someone with you who passed very quickly, as the result of a motor-car accident

MEDIUM [*to Harry Green*] I keep being drawn to the theatre There are so many from the world of spirit with you—old artists who would have been so well known that it would not be evidence if I named them There is a band

of these people here You are terribly interested in psychic phenomena Do you know the names of Anthony and Leslie? Why do I want to link you with Ray? Is there a Jewish link?

HARRY GREEN. I am Jewish

MEDIUM I am hearing names I don't understand Do you know Abe?

HARRY GREEN. Being Jewish I know many Abes!

MEDIUM This one is not in the family I get an uncle named Ray I also get the name of Nat and Joel I see a man who would have been very orthodox It's not round yourself, you yourself are not very orthodox Someone talks to me in Yiddish I can't get away from the stage life You are going to be very interested in a new play which is opening You will go abroad with it There is definitely travel for you in a new play which is under production at the moment

HARRY GREEN We are discussing several plays

MEDIUM: Do you know the name of Belle or Beryl?

HARRY GREEN: Bella, yes

MEDIUM. Someone is talking to me of Anna, in the spirit world She is an elderly lady

[*The medium said, pointing to a lady sitter: "Are you connected with this lady, I feel a very strong link?"*]

HARRY GREEN I am not connected, I am between the link [*He was seated between the surgeon and his wife*]

MEDIUM [*to Mrs C (the surgeon's wife)*]: I feel you do a lot of correspondence And you are always running around, trying to keep someone in order? They are inclined to lose their head a little.

MRS C: Actually I try to avoid them keeping me in order!

MEDIUM: Are you connected with the stage? I see papers with you, secretarial type of work Do you know anything about a doctor?

MRS C I'm married to one

MEDIUM [*to the surgeon*] You are interested in psychic healing? You think we have still to find the right answer to this, do you?

SURGEON It is interesting, scientifically

MEDIUM Can you place a very young life in spirit? Actually I get a young girl and a young man Did either of you lose a young brother?

MRS C: I didn't—my husband did

SURGEON I have two brothers in spirit in their thirties I wouldn't call that young

MEDIUM· I call them all young up to about sixty! I see a young boy in officer's uniform I get the name of Hugh This boy's photo is shown very clearly here They are talking to me of your being interested in psychic things, but you have still a long way to go In your investigations don't let your scientific mind destroy the evidence you receive I definitely still feel you will go to America later on Do you know John? And Henry comes here, too

SURGEON That was my father's name.

PANEL'S REPORTS

LORD AMWELL Poor That seems all that can be said

DR BENDIT I did not think much of her work She chose the two most resistive people in the group for her address, but I frankly did not feel she got anywhere There was some degree of telepathy, probably, but, again, nothing different from what one has had before When my wife said that the lights might be too bright for the medium, she replied "Thank you, Mrs Bendit", so presumably knowing her and thence also probably about her work

DR WEATHERHEAD This medium opened by asking us to join in the Lord's Prayer, though I could not perceive any link between religion and the subsequent demonstration She appeared to have very poor psychic abilities Part of the technique seemed to be to keep talking There was no break in the patter which she carried on, but I should think ninety per cent of what she said about myself was quite inaccurate She gave no evidence of the truth of the Spiritualist phenomena and very poor evidence of the ability some mediums have to guess at what is in the unconscious minds of the sitters

THE ULTRA-SENSITIVE

DOES the medium, using some strange and uncharted psychic vehicle, drive into the Unknown and into the living world that may lie beyond death? Or is it all a figment of the brain, at best mere super-sensitiveness, the ear of a sixth sense eavesdropping on inanimate things?

Is it a way to Paradise, or are psychic mediums merely hypersensitive poets, putting words to slender impressions, saying with Wordsworth·

To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears

It is undeniable that a high degree of psychic perception must play its part in intelligent mediumship To see this at work the Panel selected two mediums, not only from different walks of life but from widely spaced places on the Globe—Mr. Alfred Rayner, of Sydney, Australia, and Mrs Knowles, an amateur psychic, who in private life is a Molesey, Surrey, housewife They are both working examples of the way in which the "ultra-sensitive" enters into clairvoyance and clairaudience as normally operated in Spiritualist circles

Mrs Knowles has a wide following as a non-professional medium. She is a slight, amiable person who radiates sincerity and charm of manner, and during the whole seance it was noted that her voice was maintained at almost a conversational level, rarely rising to indicate any emotional stress, mental or psychical strain

She explained I am not a medium really I have never done what I call professional work, but I have always had the ability to see "extra" people When I was about five or six years old I saw my grandmother, then other things came through that were definitely evidential When I was seventeen I met Conan Doyle, and I used to do clairvoyance for him

It seemed to satisfy him, but I don't claim that I have anything extraordinary If you would like me to give a few clairvoyant descriptions I will do what I can. .

[*She turned to a gentleman sitter*]: Your health is

definitely below standard. You have a pain down the left side of your head, which extends all down the left side of your body You also have a pain on the top of the head I think you have had advice on this Standing behind you two [*to lady with him*] there is an elderly gentleman showing himself—a man about seventy-four or seventy-five He is rather tall—five feet seven or eight inches in height, and is very upright, with silver hair, bushy eyebrows, and a firm mouth And I think there is hair on the side of the face, and a short cropped beard He is wearing a black suit, and old-fashioned neckwear—I mean one would have to go back about thirty years for the type of collar he is wearing He is saying it's Henry Granger He lived near Maidstone in Kent He has built up over the lady There is also a little child about seven or eight years old It's a little boy He passed under very tragic conditions—either a very quick illness, or he was run over He was of medium colouring, small, and very pale

MEDIUM (*appearing puzzled that the figure was not recognized, turned to a near-by sitter*) Do you know this child?

SITTER No

MEDIUM. Have you seen him, Mr Benjamin? [*She addressed Joseph Benjamin, the medium, who was a guest of the Panel on this occasion*]

MR BENJAMIN Yes, I can—clearly!

MEDIUM He was run over I think I feel it was in the London area

MR BENJAMIN That's for me That's right

MEDIUM All is well with him There is a little extra proof that a certain person needs to convince them I feel that one of his parents believes implicitly, but the other is slightly antagonistic I get the name of Jimmy or Johnny I feel his mother still has his little engine on an upper shelf of a cupboard

MR BENJAMIN You're quite right I had a cousin named Joey, and he was killed in a motor accident I recently made an appeal for toys for children for Christmas and before I came here tonight I was packing them Maybe he was present then, and saw me doing it

MEDIUM Also I get the name of Margaret

MR BENJAMIN That's my maid, at home

MEDIUM I want to say "Thank Margaret for her help"

MEDIUM. Did I say before that Henry Granger is here? He is definitely connected with one of you The other name he brings is John Butler They worked together There is a beautiful collie dog there, he's a golden colour, and he's rushing about looking for his owner

MEDIUM [*to Lady Anderson*] Have you lost a dog?

LADY ANDERSON. Not a collie

MEDIUM. I'm not sure that it is a collie, but it's that type—no, it's a golden retriever Someone here loved it very much There is a little old lady here She says she is seventy-four, and her name is Susan Williamson Her hair is grey and straight, brought back into a bun She had a black dress, with lace on the bodice There is a large photograph of her in someone's room She is taking me to a little room in a large house, up some rather ricketty stairs, she had a room right at the top of this house Someone helped her very much, and took her little bits and pieces [*She turned to another sitter*] I get shipping, or ships with you I feel a big removal or change is coming with you You are going somewhere on a certain date, the first date that will be given *must* be altered Otherwise you will have many regrets

SITTER I don't know the date

MEDIUM It's 18th February, I think, but you must not travel on that day You *must* postpone it for at least two weeks If you travel later you will be very satisfied It will be very good for you from a material point of view You are thinking of travelling by air

SITTER· Yes, I was That's right

MEDIUM Well, you would not get through if you went on 18th February . [*Subsequent events showed there was no major accident to a civil airliner in Europe on that date*]

Another little child comes, about four years old, perhaps a little younger than that A *little* boy. It was necessary because it was ordained The parents were full of remorse because they felt they should have sought advice But had he recovered he would probably have been mental at the age of fifteen or sixteen

MEDIUM [*to Squadron-Leader Ullyett*] I think this is for you Can you just tell the parents that? He brings his love and says they are not to grieve He would never have been able to bring happiness to them I think it was

meningitis He says he is with Jimmy now An old lady used to look after him when he was a little boy

SQUADRON-LEADER ULLYETT. Can you tell me anything more about the parents?

MEDIUM There is a condition of unsettlement at the moment I feel it's almost a financial crisis The father is thinking of making a change in his work He and his wife are very bewildered and not very happy The mother's health condition is not too good, recently it has slowly deteriorated Within the past few weeks she has had further advice for stomach trouble At first she thought it was indigestion There is trouble, but it is not malignant She should go ahead with the treatment, and lose that fear which is causing her so much trouble She will be cured if she will act quickly, if she leaves it too long it will be rather more serious

There is someone here who knows an old lady, crippled with arthritis She is in a very bad way at the moment I don't know if it is someone's old aunt Anyway, before the end of March she is going to pass to the other side

LADY ANDERSON Someone phoned me, and spoke about their mother, who is very ill

A SITTER: Are you sure it's arthritis?

MEDIUM Well, she is very stiff and not able to move at all She will only be here for another three or four months Does the name of Sarah help? This old lady wears a little lace cap

SITTER. The one I am thinking of wears a cap, but not lace

MEDIUM Well, something on her head I feel she is very religious There is a big Bible by the side of her bed She has her own small Bible, but in addition there is a very big family Bible, which she likes now because she can see the print. There are religious pictures all round her At the head of her bed is the "Rock of Ages" picture, and she tries to turn round and look at it when she is feeling low

SITTER: That is quite true

MEDIUM: Within herself she believes in the after life, and she is quite sure she will not be here very much longer She is simply longing to meet George

SITTER Her father's name was George

MEDIUM Many difficulties will arise when she passes

There will be a little family squabble

SITTER [*with an ironic laugh*]: That's quite right

MEDIUM She made a will twenty-five years ago. Since that will was made the family have had lots of discussions about what will happen to the money I believe she had made another arrangement, quietly, and the family will be disturbed when she goes . There is an airman here He was tall, very dark, with well-marked features, blue-grey eyes, well-marked eyebrows He was a pilot, a Flying Officer He crashed in the Battle of Britain He is bringing almost an Irish name, beginning with an "O" He is about twenty-two years of age I feel I am somewhere in the north London suburbs I can't get his name He was awarded a medal posthumously His headquarters were at Biggin Hill, Kent

MR VIGURS I live between Kenley and Biggin Hill We used, of course, to meet a lot of the boys from the aerodrome We used to go to the "local" together, and they came to my home He may be one I met then

MEDIUM Were you rather unwell at the time, or recovering from something? I feel you were in trouble at the time he knew you, he and you discussed this trouble

MR VIGURS Well, I had been blitzed!

MEDIUM He wants you to know that he is still carrying on the good work He thanks you for what you did for him and his friends He had a special friend who was also an airman, but not a pilot I think perhaps you loaned them some books You are the only one to whom they can come back, and say they are still alive

PANEL'S REPORTS

LORD AMWELL I was impressed by the absence of moral exhortation and with the evident sincerity of this non-professional medium The story of the old lady crippled with arthritis was extremely convincing to me for, as well as the other sitter mentioned, I, too, know the circumstances and am able personally to confirm the accuracy of description as to both the room and the religious pictures

SIR JOHN ANDERSON This modest lady gave proof, and of course was wrong in saying "I am not a medium

really"—for we are all mediums of varying degrees According to our physical and mental condition, so do we reflect expressions of thought-waves from the unseen forces which dominate us for good or evil Mrs Knowles is undoubtedly endowed with ability to contact the Beyond, and bring evidence of a future thought-spirit world

ALF RAYNER

A REMARKABLE test of the "ultra-sensitive" was given on 20th October, 1949, by the Australian medium, Mr Alf Rayner, well known for his voluntary Spiritualist work in Sydney where he formed an efficient psychic research group The test was made in a private seance-room at the Marylebone Spiritualist Association, to which body Rayner has been attached during part of his work in the United Kingdom

Rayner is a short, rather stocky figure who radiates personal charm He speaks with a slight Australian accent, and his manner is refreshingly frank Almost at once after sitting with the Panel he confessed that he would not be able to show much psychic evidence, as he felt the mass-mind of the members of the Panel presented a barrier Nevertheless he would attempt some delineation of the psychic aura to demonstrate the ultra-sensitive, and turned to Lord Amwell

You can be extremely stubborn, which makes life a little difficult sometimes And when you lose your temper it takes too much out of you I feel that even "Old Nick" wouldn't be able to shift you once you had made up your mind You get that from your father

He was not quite so stout as yourself, a shade taller He was a kindly man, and very sensitive; a fine man who loved the country, with a good sense of humour Your mother was a forceful personality You are more like your father Your mother is showing me that she had an amazing skin She minded her own business, didn't she? And she would stick to a thing if she said so

You had to make a lot of quite big decisions Your mother is very proud of what you have done I want you to watch your health There is a little pressure that could affect you Get a medical overhaul I feel you are not

content to sit still, you put everything you have got into a thing, and you don't know when to leave off They want you to relax a little more

LORD AMWELL· Do you mean blood-pressure? I have had an overhaul for that, with very favourable results

MEDIUM You may have; but you have a pressure on the temples that I want you to watch I am hearing the name of William Thompson I feel there is a family by that name I think you have been connected with huge machines You have got on, on your own bat. Your mother is very delighted with you Have you had trouble with one ankle? The spirit people are showing me one ankle

LORD AMWELL Yes, I sprained it Can you tell me the occupation of my father?

MEDIUM No I am only seeing a lot of writing

MEDIUM [*to Mr Ainsworth*] Have you been able to write things?

MR AINSWORTH Yes

MEDIUM. You get quick impressions You have a quick, active brain You are hypersensitive, and get hurt more than people ever know You are extremely emotional, and that intensity of nature has helped you in your work Your father was an older man, broader across the forehead He had a great sense of humour There was only a very short illness before he went over Was there something the matter with his shoulder? Something that may have made one shoulder droop a bit? But I feel he was able to get about considerably

[*Rayner turned to another sitter*] Have you had a good deal of controlling to do? I feel that you have everything at your fingertips You were born to lead You will get there; in fact you have succeeded, and you are not going to let it slip out of your fingers I feel you still keep your finger on the pulse of things, small and large Can you influence politics?

You have been very conscientious with everything you have been responsible for Look after your throat, and your back I get the feeling of something almost like fibrositis Your teeth are quite all right There was poison there originally, but there is nothing wrong now Have you done a good deal of writing?

SITTER I have been associated with it

MEDIUM You have to decide whether it should come

in front of the public   Your father was considered an extremely handsome man, he had a whimsical smile He is near you a great deal, more than the one who is alive He had a very painful illness, failed quickly I am hearing the names of Joseph and King, not in the family It's a man who looked after machinery I feel he was a watchman. He puts his hand on your head Could you sing when you were young? He is talking of it. Your father is not too well

SITTER I haven't seen him for years

MEDIUM Your mother was a fairly tall woman . . . I am getting Ann It's your daughter You are very pleased with her There is great harmony between the two of you Is she married? I feel she is about eighteen

SITTER Seventeen

MEDIUM· She loves the outdoor life, and the open air I am also getting a very old lady named Sarah You also have one son He is a different type from the girl. You cannot force him He doesn't want to do what you have done Don't force him into it. The spirit people are very pleased indeed with that boy He must do creative work He is a wonderful lad

[*To Canon Knight*] You have an amazing power in your fingers for healing You are vibrating purple rays of healing You can shake off a cold or 'flu at once. You have wonderful recuperative powers I feel you wouldn't "rush" a thing

CANON KNIGHT That is true

MEDIUM It takes a lot to make you even raise your voice The spirit people are very pleased with the balance you have shown I want to say "You have made a good job of it" You get your power more from your mother than your father He was an extremely quiet man, but I can hear him laughing He had a lovely laugh Do you link with any Ministers? I can see the collar back-to-front? [*Canon Knight was not wearing a clerical collar*] Have you injured your knee? I am getting the name of Margaret. I feel someone has had a very nasty injury to the leg It links up with your wife perhaps

LORD AMWELL: It would be very evidential if I could get what I want I want one little simple thing in connection with a name, and I haven't got it yet I want to get to the mechanics of it, it is rather baffling

MEDIUM: You are more likely to get what you want if

you sit with a medium alone There are not so many different vibrations You have all been very kind. I would rather have a critical group than a gullible group

MR AINSWORTH How much do you get from spirit and how much from our own minds?

MEDIUM· If you mean telepathy, I have tried it, and I can't do it! I get your character from your aura

LORD AMWELL: When does a child stop growing in the spirit world?

MEDIUM When they have reached maturity Actual age only belongs to your physical body If a man is old when he passes he progresses, and the spirit revives You would be about twenty-five years old at the best time of your physical life Children are still guided to a certain extent by their parents who are still alive.

SQUADRON-LEADER ULLYETT Which do you prefer? Trance work or the conscious state?

MEDIUM· I prefer to do trance work in the morning, when I am not weary. I haven't done a lot of trance work over here In Australia I had a Tibetan who "used" me, and I have an Irishman, Pat Casey, who has been helping me since I have been over here I call upon my spirit helpers to come naturally

"But in Australia once I was told I should get nothing for two weeks, and I didn't!"

The medium told of an incident in Australia during the war, when there was some public rejoicing when Allied troops were there He saw a drunken sailor go into the middle of the road and attempt to board a tram There were a man and a woman standing in the road also He fully expected them to be hit by the traffic, but they stood unharmed The sailor was hit, and soon a crowd gathered round him.

The couple who had been standing, surrounded by traffic, went through the crowd and led away the spirit of the sailor who had died in the roadway Mr Rayner realized that he had been seeing, with the clearest clairvoyance he had ever experienced, the loved ones come, ready and waiting for the accident which was to take place

PANEL'S REPORTS

LORD AMWELL A high percentage of "hits". I can

confirm the personal details about one other person present Altogether an interesting sitting

CANON KNIGHT A pleasant, cheerful personality, typically Australian Gave a remarkable account of some of his own powers, but we cannot check accounts of what he says he saw in his own country He sat without being in trance, and drew in most of those present There were many statements made about those present which were clearly untrue But he said something or other about most people which was more or less on the mark

His character-reading was interesting, and might have been made by anyone able to size people up by their general impression We all do a bit of this

He said some things about me which were in character with me, but I did not think that he gave us any proof of survival of the departed, for all the things he said were in my own experience Evidence would have to be what was not known to him and not known to me

I would admit that he might have sensitive powers such as we have seen in others, by which some kind of contact is made between his subliminal consciousness and that of others present

Clearly we are still far from knowing the full possible reach of the mind

SOUL-MEASURING?

PSYCHOMETRY—literally "soul-measuring"—is a word from Spiritualist technical jargon which today has a fairly wide range of interpretations. It can mean the reading of character or even of the future from objects which have been in close contact with those being "vetted", or, in its spiritist sense, it can imply spiritual interpretation of aura.

The medium who picks up a ring, a handkerchief or a pen and "reads the future" is just as much an exponent of psychic work as is the hypersensitive investigator who explores haunted houses and poltergeist-ridden scenes to sense the spirit aura.

A leading exponent of psychometry, Mrs. Edith Clements, gave a test seance before the members of the Panel in a private seance-room in Kensington. She is a slight, dark figure, with rather bird-like movements, quick of speech and perception. She told the Panel not to be surprised if she contacted their personal characteristics, and explained that each article was teeming with something of its owner's personal auric emanation. In her opinion, she said, this gift of psychometry is a kind of soul-*sensing*.

Being pressed to give some details of the way in which she managed to develop her psychic gifts in general, and psychometry in particular, Mrs. Clements explained that she was brought up as a Roman Catholic, and was educated in a convent school where she was always told that Spiritualism was of the Devil. Even while at school she saw "visions", but did not understand them, and was afraid to tell anyone about them in case they thought her mad.

Her mother died, and to Mrs. Clements it seemed the sun of her life had set. All her life she has suffered from ill-health, and to add to her troubles at this time she was told she would have to go into hospital for another operation. She felt she could not face it, and in the depths of her despair she decided on what she then thought was the easiest way out, even to making all the arrangements.

Unexpectedly, she saw her mother standing beside her, and heard her say in an agitated voice: "For God's sake, Edith, don't do it!"

"The voice scared me stiff, and I thought I really must be mad," went on Mrs. Clements. "Anyway, it saved me from making a terrible mistake, and I have always been very sympathetic to down-and-outs ever since."

Ultimately her relatives took her to a Spiritualist church service, where she heard Mr. Vout Peters. She later joined the Brixton Church, and at the first circle she attended she was taken under control, and on coming to apologized for having fainted, only to be told she had done splendidly. Her chief guide is said to be Sunshine, a Eurasian who lived in Madras, and another guide, Rupert, who was killed in the First World War, acts as philosopher and friend to those whom she contacts. Sunshine has been doing work through her medium for more than twenty-five years.

In this test before the Panel she was handed a number of objects one at a time, and was not told until after each examination to whom each article belonged. The first object was an Oriental trinket.

MEDIUM. I am contacting here a very old lady. She is only old in years, not in spirit. She wears a little tiny mob cap. Her face is a little like parchment, and I get the name of Julia coming with her.

I feel that someone has been digging and found something down in the earth. It's a sort of excavation, and I'm getting a historical condition. [*The medium mentioned working next to the British Museum, but it was not clear whether she was referring to this part of the message.*] I am seeing temporary trestle-boards, with a lot of things laid out on them. I feel very interested but very bewildered.

There is a little boy coming back, only about seven or eight years old, and I feel he passed out as the result of an accident. He is wearing a little grey suit. I get the impression that it was a *new* suit as he had only just had it.

[*The article was claimed by Dr. Bendit, who was asked by the medium if there was a Chinese god in the house, either his house or the house from which the article came. Dr. Bendit admitted that the trinket came from a friend's house, and he could not definitely ascertain at once the correctness of this psychometric diagnosis.*]

A cuff-link was next handed to Mrs. Clements.

MEDIUM. I get the impression of an obstacle here. I am just in front of a brick wall. I can't move because I feel it

is too high to look over All around circumstances confront me It's a condition that I can't do very much about I just have to wait and see. I want to revive hope and encouragement here

I feel strongly that there is a gentleman on the other side who wants to clutch his heart—he passed over as a result of a heart seizure. He was a very learned and intellectual gentleman, if you will excuse the expression He moved amongst people, and is feeling very strange now He didn't know very much about the other side of life, and was surprised to find that life is continuous

I can't promise but I would say the way out will be given, today or tomorrow. All the things I have been worrying about with fear and apprehension will be removed

I am hearing the name of Anderson. I don't know if it's a Scotsman, I feel I want to go up north for him I feel I have something to do with experimenting or analysing, either with the gentleman, or the owner of this article.

I have to advise you to go on digging and delving Dig in deeply to get below the roots, and there you will find the richest soil

Next a wristwatch was handed to Mrs Clements.

MEDIUM With this article I get strong character and personality You would go far as either a doctor or a surgeon. Here is someone who has to help humanity, has always done so I feel you are still being called upon to help You have something to do amongst people Somewhat of a prop and a leaning post

There is on the other side of life someone who feels like a father, passed over with a seizure, or heart failure I feel that, as a consequence, you have had to take on responsibility There is extreme magnetism here Don't let it lie dormant and if I know anything of the spirit people they will not let it lie dormant.

I get the surname of Morris, and am hearing the name of John, but don't know if they link together That is all I get with this article Sometimes the messages are short and sweet!

Next came a badge

MEDIUM. I feel as though I were up to my neck in water This doesn't symbolize trouble, I literally *feel* the water I can just about keep my head above it I can't

struggle any more, I am sinking, sinking, *sinking*

Then there is a wonderful feeling of relief Exhilaration and excitement I am getting the name of Johnson, and the Christian name of Alec I feel this spirit was not more than thirty or thirty-five years of age He is quite nice-looking, and is wearing a dark naval uniform He passed out through drowning, and he is wanting to give such a push to urge someone on the earth

I am to tell you that nothing is by chance Whether you are beginning to investigate, I don't know, but all this is not by chance at all I get something of an impression —do you interview or meet people in order to get confirmation? I don't really know

I feel you are a sensitive, you could see visions, but you have a tendency to inhibit yourself I just want to pat you on the shoulder and say "You keep going ahead" I get the name of William, there are two Williams here, one named after someone who passed over Also the name of Stevens, and the very ordinary name of Elizabeth

A woman's ring was handed up

MEDIUM This ring was a gift, or a memento This owner has a great love of beauty, is very artistic I am in contact with a lady who passed when she was somewhere between the ages of fifty-four and fifty-eight She was a little bit taller than myself and had a nice figure, but I feel she wasted It may have been cancer that took her over I am feeling a motherly influence She is calling you a brick It's a term of endearment, she doesn't mean that you are as hard as a brick, because I feel you are the very opposite.

You should know how to get in touch with the spirit world I feel this is a testing time in your affairs You have been brought to a standstill You have psychic power, it will help you to go a long way The spirit people are helping you in this direction I hear the name of Maria, and also Raymond

I also get a name, or rather the impression of a name, which has something to do with the crossing of a river

[*The medium asked Mrs Bendit (who claimed the ring) if she was interested in France, because this name had something to do with France, and a river*]

Another ring was handed to Mrs Clements

MEDIUM I feel very peculiar I must sit down while I hold this article I just can't pull myself together I feel as

though I had received a terrific blow on the side of the temple

There is a gentleman on the other side of life bringing this condition He may have had an accident, I feel there was some tragedy here I feel as though I am hovering between two worlds

Now the condition has passed I have a terrific amount of energy (only wish I had as much myself!) I feel there are not enough hours in the day to get through all the things I want to do Even forty-eight hours would not be enough for you You would make a very good organizer—you are always a jump ahead You are very quick, and inclined to become aerated—not angry—if people don't see things as quickly as you do I hope you will understand this

I feel a warning hand on my shoulder; someone wants you to ease up a bit Something is going on a little bit too rapidly I am in contact here with a young girl, she wasn't more than eighteen or twenty years of age. She passed out with tuberculosis in the lung, or pneumonia

I feel you need peace within and peace without I am hearing the name of Edwards or Edward, also Eric or Derick, and the surname of Chapman

[*The ring was claimed by Mrs Haldane*]

PANEL'S REPORTS

LORD AMWELL Altogether too trifling

SIR JOHN ANDERSON An excellent demonstration showing that the medium has the power to contact the latent vibrations of matter.

DR BENDIT Sketchy suggestion of paranormal cognition, also with a great deal of hit-or-miss I entirely fail to see the connection of this with Spiritualism, despite the rather indefinite suggestion, at times, that objects belonged to or were connected with dead people The power of psychometry comes under the heading of paranormal cognition or extra-sensory perception and belongs to the operator herself There was not even the suggestion of it being done by any "dead" spirit.

MRS HALDANE I had brought a ring along to this lady's session, borrowed from a woman friend who

frequently wears it I knew nothing, myself, of its history I took down in my notebook Mrs Clements' statements about the person associated with this ring

When I read them to my friend, it appeared that it had been given to her, not by a man (cf Mrs Clements' "a gentleman on the other side") but by a woman friend Apart from the mistake about the sex of the donor, Mrs Clements gave a pretty accurate description of this lady's death in a tragic accident, and also a good account of her personality. Mrs Clements seems to have remarkable clairvoyant and telepathic gifts

Her whole demonstration of psychometry produced one, for me, very interesting result When describing the owner of a watch handed to her by Mr Ainsworth, the name of "Morris" came to her, "not the first name but a surname", immediately followed by "John" — "John Morris"

Now Mr John Morris is not only a very old friend of mine, but some years ago we collaborated in a series of telepathic experiments, which had one quite remarkable result

At the seance, I was not consciously thinking of Mr Morris Nevertheless, Mrs Clements must have picked the name out of my subconscious mind by straight and most successful telepathy I have often acted as "receiver" in such experiments, but never before as a "transmitter", and was most interested by this occurrence

SPIRIT HEALING

HEALING of the sick by the "laying on of hands" or making of psychic passes is not regarded by all ps workers as a legitimate part of what can strictly be sidered to be within the scope of spiritism Yet there Spiritualists who aver *that if only spirit healing coul* positively probed and regulated, if only a healthy could always be made to depend on a healthy spirit, this single aspect of psychic activity might transcen others in its usefulness to mankind

The Panel investigated three forms of healing, three widely differing mediums.

Mrs Nan McKenzie was seen at work by a me sub-section of the Panel during one of her regular he sessions at the Marylebone Spiritualist Associatio Russell Square, London, W C 2

When the doctors entered the room, Mrs McK was working behind two large screens in the corner. a few of the lights were on There was a couch behin screens, and a chair placed in the centre for the pa Those who watched the demonstration sat on chairs circle round the healer and patient

Mrs McKenzie wore a white surgical coat Her hai long, coiled into a bun on the nape of her neck, with a net round it She is not very tall, quite plump, and strong arms and fingers She sat on a low stool working, and was already in a trance condition, sc voice heard was presumed to be that of the spirit g

The healer was working on a woman patient wh a large growth in her throat The guide was told tha doctors would like to see a demonstration of spirit he to which the guide replied that it would really be b to bring along people who had been healed at this ce and could testify to their recovery *There* woul standing proof

The guide, said to be a male Red Indian n "Running Water", continued "I am working upon nerves and muscles that comprise this part of the cl He said there had been other helpers there all day,

a number of patients in the afternoon "Running Water" said he had known cases of instantaneous healing It didn't very often happen, but it was possible This was in answer to a question as to whether the healing powers usually effected a gradual cure

When the woman patient had been treated the guide worked on Dr. Bendit's head and spine The doctor was asked if he felt a soothing influence "Running Water" also worked on Mr Ainsworth's head and back, and he said he could feel the warmth and it was "very comforting" "Running Water" said· "There are too many 'trappings' (presumably clothes) for the healing power to go through properly" The jacket and waistcoat were not removed

DR BENDIT Do you work with your left or right hand, or doesn't it make any difference?

RUNNING WATER Sometimes it is the left hand, sometimes the right, sometimes both hands Sometimes the left hand is as cold as ice, and the other hand hot It all depends on the patient's needs There is not much to see in spirit healing, you know It's either the taking away of the affected part, or the flowing-in of power, which of course you can't see

[*The guide was asked "What is the difference between what you do, and what is known as vital magnetic healing?"*]

GUIDE This healing is for the heart and soul and the mind, as well as for the body I don't know that there is much difference, I have never really studied vital magnetic healing

DR BENDIT Do you find it easier to work through one who knows something about the body?

GUIDE Yes, it is easier

DR BENDIT Do you ever work through a surgeon, or any other person who doesn't realize it?

GUIDE Yes, often I also help and inspire in his work a doctor in Wolverhampton, who knows and appreciates the help he receives I have given him many messages, I have helped him in many ways He has called upon me and has felt my aid There are many who are helped in such a way from the spirit side They say they have a "brain-wave" but it is the thought from spirit

[*All through the demonstration Mrs McKenzie spoke in a rather guttural manner, in imperfect English Always*

she spoke impersonally, as if the spirit guide was a separate entity For instance, the guide said while healing "Very tired tonight. She came up to London on a very early train to work on a case—at a much earlier hour than my medium is used to rising."]

DR BENDIT'S REPORT

My remarks about Mr J J Thomas (*q v*) can be applied almost exactly to this lady She has good hands for magnetic healing Otherwise, her method is no different The questions I asked were answered in the manner I expected them to be It is worth noting that Mrs McKenzie was, I believe, a nurse or something of the sort

The patient with the cyst on the neck was told that it would not burst at once Ordinary clinical experience is enough to justify that If as is likely it does burst spontaneously in due course, this will probably be claimed as a success for "Running Water" The result will be an unsightly scar remaining for life, whereas a properly conducted operation in the first instance would probably have left little mark.

I emphasize this to point to the probable foolishness of resorting to unusual methods, where proper medical attention would save much harm and trouble

J. J THOMAS

A SPIRIT healer who claims to have cured thousands of men and women in his public meetings throughout Britain, and who toured Germany during the early part of 1950, is Mr J J Thomas, whose spirit guide is said to be a German doctor known now simply as "Doctor Robert"

When Thomas was introduced to the circle he was wearing a brown suit, grey-and-yellow check shirt and yellow tie, over which he had a white surgical coat The seance-room was equipped with a couch, towels, and a bowl of water in which from time to time Thomas rinsed, apparently symbolic of a surgeon's "washing up"

After introductions had been made, Thomas stood at the back of the surgical couch, lowered his head in prayer,

and apparently went into trance at once, for the following brief prayer was said in guttural fashion as though "Dr Robert" had already taken control

Oh, great eternal Spirit, we Thy servants ask that we may have a manifestation of the healing power, and if it be Thy will these children may be restored back to health and strength once more

Good afternoon [*Thomas, with eyes half-closed, turned to his white-coated assistant*] I will have the little man as my first patient [*The patient, a Mr Ingham, was led to the surgical table*]

I hope you are not nervous You have quite a lot of courage to come and have all these people watch you I am going to tell you every complaint I can find with you —every little condition Just say yes or no, will you?

Do you get a little pain there [*touching patient's heart*] and spasmodic pain in the stomach? You get a little trouble in what you sit on, too

PATIENT Not a lot

DR ROBERT There is a pain—a dull ache all the time [*touching the stomach, near appendix*]?

PATIENT Yes, it's about a thousand times worse than toothache

DR ROBERT I am going to try to operate on you and get you back to normal health There's a little throat condition, something of a headache, and a little trouble with the left eye Also, you have hurt your leg in the past

PATIENT That is perfectly right

DR ROBERT· You have a little spot there [*chest*], have had an X-ray—I am going to do what none of your earth doctors would dare do [*making the motion of cutting across the lower part of the chest*] This would destroy all the nerves, I think the earth doctors would agree with me

You get tired and listless, the legs get very shaky I am going to open your stomach, then I will sew you up tighter than a Scotsman's purse, as you would say on your earth! Oh, we like a joke! We have a sense of humour on the other side, you know

You will be a very happy man You will get your health back You were going to have a picture taken [*implying an X-ray photograph*] You have had trouble with one of your toes I can feel it up here, in your belly ! Send out a little prayer every night when you go to bed If you hear

one knock just say "Good night" If people tell you this is the work of the Devil, tell them he must be a very good devil if he gets you better and then tells you to thank God for it!

You have a pain behind the ear You have had one tooth causing you a little trouble

PATIENT That is right

The door opened, and two more helpers came in "Rosemary", still in outdoor coat, took her place at the foot of the healing couch, and "George" took his place at the head, both placed there by the white-coated assistant

After a few more pseudo-surgical hand movements by Thomas, the patient was asked to link up "at the tenth hour", and finally the guide said Peace be in your heart Get well, and thank God

The second patient, a Mr Nicholson, was then assisted to the table, and, answering a query from the spirit guide, said this also was his first experience of spirit healing

GUIDE There is a pain which is down in the stomach, travels round to the heart and then round to the back The patient agreed, but said it didn't go quite so far up as the guide had indicated

DR ROBERT You also have a throat condition?

PATIENT That is perfectly correct

DR ROBERT You have had trouble with your appendix

PATIENT No

DR ROBERT You have had a very heavy shock in your life Have you been very near jumping out of your skin?

PATIENT Yes

DR ROBERT It was during the conflict, you had what is called a very "narrow squeak" You have come here with one thought in mind—to get well You have had trouble with your left ankle, also up towards the knee?

PATIENT No

DR ROBERT Has your wife got leg trouble? She has been going down-hill, too

PATIENT Yes

DR ROBERT She has a head condition—migraine You are just wondering how I know! I have a colleague who has looked at the lady I have the report back

The guide explained that "Dr Robert" was a *nom-de-plume* Spirit people came back with ordinary names because if they liked to impersonate a famous individual

no one on this earth could prove they were not that person "Dr Robert" said he has no turban, no halo or wings, and is never likely to have them! Then turning again to the patient and still keeping in mind the diagnosed health condition of the patient's wife, he said

Both of you will get well You get a little itchy feeling on the tongue—like a little quivering I am going to put some healing into you It will help more than you realize You have had very bad bronchial trouble, verging on pleurisy [*still making cutting motions over patient*] Do you find the top of the head muzzy? This condition is an aftermath of the chaos [*implying the Second World War*] All your vitality went from you You have had no real will since

PATIENT. That is right

DR ROBERT I am going to operate on your solar plexus

Suddenly the medium looked up, and said there was a lady among the watchers who had a corn or a hard callous The guide told the members of the Panel and their guests that already, before they came, they had been vetted and "they" had had a look at them.

"There was only one dissenter amongst you, and he is not here today Does that surprise you?" [*This was presumed to be reference to Canon Knight, not present at this seance*]

DR ROBERT· Did you fall—twenty-three or twenty-four years ago?

PATIENT Maybe I can't remember

DR ROBERT Have you had a little trouble with the right eye?

PATIENT· Yes, quite right

DR ROBERT You are going to have a very pleasant surprise—no operation!

The guide broke off to say there was a lady present who was very interested in children, had devoted a lot of her time to them Lady Anderson said she was interested in children and youth The guide told her she did more than she realized, she was able to come down to the child's level, instead of trying to drag the child up to hers She had a great spirit behind her, who gave her the incentive to do this work

DR. ROBERT [*to patient*]. In a very short space of time you will feel a different man You will get through life

with more determination Get health back, get happiness and thank God

The third patient, a well-known surgeon, was then conducted to the table

GUIDE. I think we have very much in common, you and I, that is, getting rid of suffering

[*He removed a slipper from the doctor's foot and massaged it*] The patient observed· "I couldn't have let you do that to me, a few days ago"

DR ROBERT If I were on the earth I should say this was the result of wine! We'll put a nice little injection there. It gets well The pain goes from the knee right down to the toe This is from one doctor to another, eh! I think you have been a scallywag!! When I have finished with you, you will walk out much better than you walked in I am a very lively spirit when I get into the man's body! A pain in the head, also in the back? Many times you have treated your people and you feel very tired and sick afterwards

PATIENT Naturally, most people do after working hard

DR ROBERT That is a law that operates If you have a healthy body and someone near you is sick, they sap your strength

[*Here Dr Bendit interjected "Surely that can be stopped, if you know it's happening"*]

GUIDE It cannot be stopped It is the reason people say the young should not sleep with the very old I can take power from any one of you who can spare it and put into the victim who needs it Every one of you will feel as though you have been revitalized when you leave

There are many spirit people here also They come here to learn, we have to help them, too We have twenty-five spirit doctors working on this one There are also students, nurses, helpers, message bearers, and hundreds of thousands of spirits helping

I just report what I am able to see to you people Every one of you people here will go away feeling stronger than you came in

You bring your victims, we do our best to heal them I don't think I have missed anything with the two men I have healed?

[*Both the preceding patients agreed*]

GUIDE Spirit help is there for everyone We are not here to decry your medical profession. We are only here

to help. [*To the patient*] If your time had come I could not say I will get you well, I could only relieve you But I know you have a long way to go You have achieved something You have a favourite chair? [*The patient said that was true*] One day you will wake up in it and find yourself dead!

Life goes on always, just like taking an old coat off and putting on a new one This is your preliminary training, because we do not talk in the spirit world, we only think Each one of you carries a colour which shines before you You cannot talk with your tongue in your cheek You will be known for yourself there

You, when you get to the world of spirit, will get a very great greeting from your colleagues You will come back and work with your knowledge You have to go on

DR BENDIT: Do you stay there forever?

GUIDE Ben Ali Pasha, who comes with me (a Persian), has been here for two thousand of your earth years I have been "dead" for fifty-four years! I come back under the *nom-de-plume* of "Dr Robert" It means nothing It just suits the purpose Think deeply if anyone says they are an Egyptian princess! [*Thomas turned to the patient*] I am going to say to you, if your foot gets well I shall be a very good doctor, eh? *Auf Wiedersehen* Peace be in your heart

The guide closed with the following prayer

Oh great Divine Light, Thy servants come to Thee asking that peace, goodwill, health and happiness may be given to each of these Thy children, and we ask that each one may be dismissed with Thy peace We ask this in Thy name Peace be in your hearts God bless you

When "Dr Robert" had left, Thomas, the medium, appeared rather dazed The first thing he did was to accept a cigarette, and took about ten minutes to regain his composure, complaining in fact of a pain in the foot

[*The following report was prepared by the second patient, Mr Nicholson, after returning home on the night of his treatment*].

Diagnosis duodenal: Correct

Excessive eye watering Correct

Excessive mouth saliva Correct.

Severe chest illness. Correct (double pneumonia when a child)

Right-foot weakness Correct

Cause of duodenal (given as twenty years or so back) due to nervous shock This I have traced back to twenty-one years ago when my wife was suddenly taken to hospital for an emergency operation for appendicitis. At this time I was ill with nervous strain This links up with the appendix trouble which the medium mentioned

He correctly diagnosed the left leg and head trouble of my wife, who was not present at the circle

I should like to place on record that at the exact time this last diagnosis was made, my wife was in pain and had remarked "I wish that man could cure me" This seems a strange coincidence, as Mr Thomas had said at about this time that he had received a message regarding my wife

PANEL'S REPORTS

LORD AMWELL · As the seance was one of healing, I prefer to leave medical members of the Panel to express their opinions

SIR JOHN ANDERSON. Gentle and soothing personality Seemed most sincere in his work It is, however, difficult to judge of the effect of healing at a seance, as this can only be proved over a period

DR BENDIT. Technique much like that of other mediums, both in guessing and in eliciting information There seems to be a hit-or-miss element of paranormal diagnosis A hernia was entirely missed on one patient while symptoms were attributed to him which he had not got, and in one case which were not his but his wife's Results entirely inconclusive No evidence to confirm either claims made or the Spiritualist hypothesis

MRS HALDANE Mr Thomas, in his normal state, has a kind and humorous personality He undoubtedly is acutely sensitive to human suffering and has a sincere desire to help to alleviate it He also appears to have considerable mesmeric gifts and very powerful, sensitive hands

When his control, "Dr Robert", took over, the pleasant qualities of Mr Thomas were accentuated, to me it was not in the least a different personality but the same, only older and more so I noticed the slight German accent immediately, but the only German words spoken by the

"doctor" were *Auf Wiedersehen* Unfortunately I did not think until afterwards of speaking to him myself in colloquial German, so I cannot say whether he knew any more

I am not competent to speak about his medical qualifications Mr Thomas was out of the room for at least ten minutes before the seance began, the two patients were also in another room I cannot, therefore, say with any certainty whether or not he had any opportunity of discovering their symptoms before the "doctor" did

One cannot rule out the possibility that he could have done so, either by telepathy or clairvoyance With regard to his examination of the doctor, it was notably more superficial than that of the others, and he broke it off at one point to address the audience and talk to them Mr Thomas also appeared to me to be a case of dissociated personality, with considerable clairvoyant and telepathic talents

L A G STRONG· This session showed that Mr Thomas possesses undoubted gifts of paranormal sensitivity His claim is that he is controlled by the spirit of a dead German doctor, who returns under the pseudonym of "Dr Robert"

In the experiment, Mr Thomas examined two patients brought by a doctor who knew their medical history Apparently in a light trance, he passed his hands over the first of these, who was lying more or less relaxed upon a couch, and proceeded to describe with great accuracy the symptoms which the patient felt, together with those which he had felt in the past, such as a severe dental abscess many years before This enumeration, confirmed by the patient, was highly impressive, including as it did some very trivial symptoms In the course of this recital the medium went through the pantomime of an imaginary operation, concluding his treatment with an extremely powerful suggestion to the patient of improved health in fulfilment of certain simple ritual prescriptions

With the second patient the medium began successfully, then wandered off into apparent inaccuracies This he accounted for by saying that he was picking up sensations from the patient's wife The patient confirmed the account of these, and even more dramatic confirmation, I am told, was obtained later, when the wife testified that at that

hour she had been in pain, and had wished fervently that she were being treated instead of her husband.

In this case, too, Mr Thomas did a pantomime operation. Finally, he demanded that a medical member of our Panel, suffering from gout in one foot, should lie on the couch. He stroked the doctor's foot and moved it slowly, without apparently causing any discomfort. The doctor was for the moment unable to say whether the treatment had done his foot any good, and Mr Thomas, after emerging from his apparent trance, complained of pain in his right foot, a transference with which manual healers are all too familiar.

It is worth remarking that "Dr Robert" did not name the complaint from which either of the first two patients was suffering, although his confident reference to their X-ray photographs may have meant that he suspected it.

He possesses highly magnetic hands, and there is no doubt, on the evidence before us, that he can sympathetically perceive what his patients are feeling and have felt in the way of symptoms. But many manual practitioners, masseurs and others can do this, who do not lay claim to spirit control. Had I been competent to do so, I would have addressed "Dr Robert" in German, and would not have been surprised if he did not understand me.

This is in no way to impugn his honesty, or to dispute his remarkable powers; but he did nothing with which I am not already familiar, and certainly nothing which requires the hypothesis of control by a discarnate spirit. The second of his two patients suggested that the whole thing might be explained by a dissociation of personality. This seems to me highly probable.

HARLEY-STREET SURGEON. Mr Thomas appeared to go into a trance in which he said he was controlled by an unknown doctor from the spirit world, called "Dr Robert". But there was no evidence of this, other than that he said so. He treated a number of patients. As each one came up he was put on a couch. Mr Thomas did not elicit any history of their diseases from the patients, on the contrary he told them that they had such-and-such symptoms. He did not give them much time to say whether this was the case or not, and even if they had wished to, they might have been too scared in the presence of a large audience to contradict him.

He then went through a series of motions which could be described as a caricature of those which a surgeon might make in operating After some ten minutes of this he would assure the patient he would get perfectly well, and dismiss him with the words *Auf Wiedersehen*

He was a very good showman with a strong personality so that he exerted a considerable force of suggestion I think it likely that in cases where there was an element of neurosis he might effect "improvement" or even a cure But I doubt if he could do anything for an organic disease

On one occasion he treated two men whom I had already seen They had duodenal ulcers to my certain knowledge after X-ray examination

[*The following is a medical report on the first patient, taken after an X-ray examination at a London hospital*]

A duodenal ulcer is present The opaque meal passes through the oesophagus with no evidence of obstruction The oesophageal lumen is normal in width and outline The gastric mucosal pattern is normal and the stomach when filled shows no evidence of ulcer or new growth Gastric peristalsis is active and emptying of the gastric contents takes place through the pylorus without delay

A large pocket projects from the lesser curvature aspect of the duodenal cap The findings are those of duodenal ulcer which is probably involving the pancreas

[*The following is a medical report on the second patient, taken after an X-ray examination at a London hospital*]

A duodenal ulcer is present When filled with barium the oesophageal lumen is normal in width and outline with no evidence of pathological change The gastric mucosal folds are normal in width and arrangement and the stomach when filled is normal in outline There is no evidence of gastric ulcer, new growth or of inflammatory change in the stomach Gastric peristalsis is active and the stomach empties its contents through the pylorus in two and a quarter hours from commencement of the examination

The duodenal cap fills poorly It is very irritable and shows considerable deformity with an ulcer niche on its posterior wall

THE THIRD spirit healer differs in some degree from the preceding in that he would no doubt agree his own personal magnetism is a positive aid to the cures that are said to be registered through his aid. He is a cheery, stocky figure, with silver-grey hair and a sun-tanned complexion, and his very manner radiates good humour and health

He arrived in a lounge suit, took off his jacket and tie while working, and loosened the neck of his white shirt He wore no white surgical jacket, and made no attempt at pseudo-medical gestures or jargon His manner is hearty rather than "bedside" and he speaks to patients in a quiet, forceful tone, commanding their will There was no attempt to go into a trance. He has two assistants, a young married couple, Mr and Mrs George Burton, who helped to manipulate the patients

Mr Campbell, a guest of the Panel on this occasion, offered himself as the first patient, as he had for a considerable time been under medical observation for an obscure spinal trouble giving intermittent but severe pain

The medium seated Mr Campbell on a chair in front of the Committee, and invited the Harley-street surgeon to feel what he called the "poker back" of the patient The doctor agreed that the spine was rigid, there was no flexibility at all

Edwards said there is normally very little that can be done to make this type of spine mobile He was facing the patient, seated on another chair, with both arms round and the fingers working up and down the spine while he was talking He told the patient to relax his spine and lean back on the healer's fingers

EDWARDS. What we do is *not* osteopathy [*He kept moving the patient from side to side all the time After a few minutes the doctor was invited to feel the spine again, and confirm that it was much looser The doctor confirmed that this was so*]

EDWARDS Could you touch your toes before?

PATIENT No

EDWARDS· Try now [*The patient bent over and touched his toes*] The pressure is now removed from the nerve centre, so it should yield now This will keep your back pliable

Asked how long he had been doing this work, Mr. Edwards said it would be some fifteen or sixteen years.

"We had a small healing circle, found that miracles were taking place, so we carried on. I am nothing. This is beyond the wisdom of man. Therefore it must be done by someone who is greater than man. This doesn't just happen. There is a law behind it and we couldn't work without the spirit friends. I have never studied osteopathy, but sometimes my hands absolutely vibrate. I know it is definitely a power beyond me."

PATIENT: I have been to many osteopaths, and have found relief, but it has always been temporary.

EDWARDS: They have hurt you, I expect. I didn't hurt you, did I? There is never any pain with spirit healing. Actually all I did was to demonstrate that the back is now mobile. The healing took place before I moved you. I would ask you to keep in touch with me once a week. We do a large part of our work by absent healing, and see constant improvement and progress take place. I have many thousands of letters testifying to spiritual healing, *including cancer.*

CANON KNIGHT: In view of the fact that all through the ages healing has been done at shrines and places like Lourdes, would you claim a monopoly for this type of miracle for your denomination?

EDWARDS: I don't believe there is one power given to the Catholic, or the Methodist, or the Spiritualist. All can tap this healing force. We just believe we have come to the most practical way. We have letters, hundreds of them, speaking of patients who have been declared too old, or beyond all medical help—so-called incurables, the big majority speak of improvement. They speak of healing of the mind and happiness in the home.

SQUADRON-LEADER ULLYETT: Does that mean some patients have cured themselves?

ANSWER: No. It is all by the power of spirit that these changes take place. Mostly we have the co-operation of the patient, but sometimes it is given by the third party, such as someone giving the name of a child, or a mentally deficient.

A DOCTOR asked: What about family history—cases like night-blindness, for instance?

ANSWER: We never limit what we do. Conditions that

have seemed absolutely impossible have yielded We have seen eyes that looked like a smear, and the sight came back to them We had a case of cataract last Monday, a week ago That person can now see quite clearly And once the sight comes back it doesn't go again

LORD AMWELL Is your diagnostic knowledge part of the training you have had?

EDWARDS replied. "I get *intuitive* diagnosis People have told me things they have the matter with them, and I don't know what they are talking about!"

Mr Ainsworth, suffering temporarily with one weak and watering eye, had healing from Edwards He said it was better after the healing, but didn't know how long it would last

Mr Ainsworth also had a pain in his shoulder The healer worked on it and it improved Edwards diagnosed it as a functional condition, and said "We have taken the pain away from you, but we shan't see immediate results"

A third patient received healing for his gout, and the medium smiled "It is not a serious case at the moment".

PATIENT Delighted to think you think so! It's not so bad now, but it was acute ten days ago

EDWARDS It is yielding nicely now Am I hurting you? No? I have never personally treated gout like this I have always done it by absent healing.'

In answer to a question the medium said there is a strong psychological element in rheumatism Also with migraine there is a definite link-up between the mind and the physical health

DR BENDIT· You have been doing this for fifteen or sixteen years How did you first discover it?

EDWARDS We experimented with absent healing There was a man in Brompton Hospital with tuberculosis, pleurisy and haemorrhage, and he was not expected to live A friend and I tried absent healing on him Within a few days his temperature went down; the pleurisy disappeared and the haemorrhage ceased Immediately after we had two or three other cases of tuberculosis and also one with a growth, a cancerous growth All these were without manipulation except for one case when I placed my hands on the patient's head

CANON KNIGHT. Men have always possessed these gifts

and used them The Bible tells us there are diversities of gifts Why do you need an extra hypothesis?

EDWARDS It has always been the same right down the ages I think we have some right to go a little further and try to find out about them

PANEL'S REPORTS

SIR JOHN ANDERSON Full of sympathy, purposeful and convincing Manner humble and profound in his approach to the Divine mind I liked him also for the reason that he operated by direct inspiration—the highest form of psychic power

MRS HALDANE This gentleman manipulated the back of Mr Campbell, who suffers from a spastic condition of the spine The patient said afterwards that the manipulation had given him some temporary relief I myself have suffered for years from sacro-iliac subluxation Manipulation and massage treatment invariably bring relief to the pain I cannot see the need to link such treatment with "spirit" healing, especially as Mr Harry Edwards was not in trance or under "control" but seemed perfectly normal, efficient, and a very self-confident, strong personality

I was perturbed by his claim that patients can be cured in their absence by prayer, I cannot see how it is reconcilable with any of the theories or practices of medical usage I think one should treat such claims with great caution, because although in certain cases Spiritualist treatment may well bring relief, in others it might prevent a sufferer from seeking medical aid or surgical intervention in time

CANON KNIGHT: His methods were similar to faith healers in general He gave an impression of personal vitality which in itself would elicit response in many I was prepared to accept his possession of such powers He laid stress on his power to heal in absence, and I should like a check on this He did not appear to lay stress on inward preparation by patients

I could not see why he called in the hypothesis of departed spirits If the gift is in his possession it arises out of his own personality—although its source may lie

elsewhere—but I could not see enough difference between Edwards and other healers to understand the necessity for his explanation.

HARLEY-STREET SURGEON He didn't go into a trance neither did he say that he was controlled by anybody But he did manipulate the patients There did not appear to be anything magical in it

I saw him produce mobility in a spine that was being held rigid by the spinal muscles I am in touch with this patient, who tells me that the improvement was striking For three months afterwards there was no serious recurrence of pain.

L A G STRONG This was to me a most impressive sitting

Harry Edwards's first patient was Mr Campbell Edwards ascertained from him that his trouble was in his back, and, after briefly feeling his spine, inquired whether there was a doctor present A member of the Panel said "I am a surgeon", whereupon Edwards invited him to examine the spine, and say whether he confirmed his own diagnosis of a spastic condition The doctor felt the spine, and confirmed the diagnosis Edwards then asked whether this was a condition which orthodox medicine found difficult to treat, and the doctor agreed

Edwards then put his hands over the affected vertebrae, and (after what appeared to be comparatively light touch upon them) invited his patient to bend forwards, backwards, and to either side This he was able to do freely, without pain or discomfort Edwards then invited the doctor to examine the spine again, and he pronounced that it was "much better"

The second patient was Mr Ainsworth, who complained first of all of a weeping tear duct in his left eye Edwards and a woman assistant placed their hands over the eye, and after a time which I should put at between one and two minutes, removed them Edwards wiped the eye with a handkerchief, and Mr Ainsworth agreed that the flow had ceased He added whimsically that it would probably begin again soon It did not as long as I was present, and I gather from subsequent information that, after one brief recrudescence, the condition was allayed

He then submitted to treatment for what I understood to be neuritis in both upper arms After quickly flexing

each arm, Edwards pulled them out to their full extent and then made Ainsworth pull with his full weight upon the back of a chair Mr Ainsworth said he would be better convinced by making an attempt to do something he had not been able to do for some time, that is, to pick up a chair in his right hand and rotate the arm This, to his surprise, he found he was able to do

Harry Edwards then manipulated a doctor's gouty foot, with results which I have had no opportunity of checking

The healer did not claim that any improvements in condition would necessarily be permanent He stressed that there were many conditions which required repeated visits He made no extravagant claims at all, and was scrupulous in maintaining that he himself had no power to heal, but was simply a channel through which power came Asked about the nature of the power, he stated his belief that it was given him by discarnate spirits His personality I found both pleasant and strong, and he impressed me as a man of integrity, whose intentions were wholly good and whose practice was wholly honest

As to the source of a power which appeared to me to be beyond dispute, I prefer to pass an open verdict My personal belief is that what doctors term *vis medicatrix naturae* (Nature's own tendency to heal injury and disease) can by certain individuals and in certain circumstances be concentrated, much in the way that the sun's rays can be concentrated through a burning-glass, with the result that their action is concentrated, and the effect appears dramatic or even miraculous It would take far too long, and involve considerations which here would be out of place, to detail the evidence which has led me to this belief

Let me say instead that I am ready to believe that Harry Edwards can be a focus of healing powers not yet fully understood by orthodox medical science.

CONCLUDING ESSAYS

Space does not permit a detailed essay on each seance held, but the following comments by certain members of the Investigating Panel give facts and views supplementary to those given in their individual verdicts

LORD AMWELL, C B E

I HAVE wondered at the apparent obstinacy of many scientists in refusing to examine Spiritualists' claims I still do, but from experiences as a member of the recently constituted Panel of Investigation it is clear to me that popular Spiritualism is quite as much to blame because of its contempt of ordered thinking and its indifference to evidential values

Spiritualism resents criticism of any kind as being at least potentially hostile, and seems to do its best to discourage the trained mind It is with regret that I feel compelled to write in this way for I am by no means hostile to the claims in question In my view there is good evidence of paranormal fact available for examination, and good reason for belief in continuity

I want every possible shred of evidence considered and every reason competently discussed, but I find, as the scientist, too, must find in contrast to his own systematic work, something repellent about the highly emotional and temperamentally uncritical footing of this widespread movement

It is incumbent upon me to give reasons for the above statement, but first I would like to make my own attitude clear Spiritualists have the habit of dubbing every critic a benighted materialist who delights in disturbing "vibrations" upon which phenomena are supposed to depend I doubt whether they know in the least what they are talking about Modern materialism is not the Victorian crudity that went under that name and it is not impossible in these days to hold the view that what is vital to materialistic science does little intellectual violence to religious values

In any event, it seems to me that Spiritualists can hardly afford to take any too strong a line here considering the statements they make about the next world, which is "revealed" as spatial, material, and sensory enough in all conscience

I am satisfied that genuine paranormal phenomena occur Years ago I produced a good deal of it for myself just as anyone may do who is prepared to give time and exercise patience And here let me say that while commercialized Spiritualism is more or less "phoney" and the movement should be cleaned up by its honest members, nobody today can read the vast and authoritative literature relating to psychical research that is available and not be convinced that genuine mediumship exists The explanation that puts it all down to fraud done by conjuring is mere intellectual laziness

It is not true that conjurers themselves combine to denounce Spiritualism, as so many believe who quote the claim that conjurers can reproduce any spirit phenomena by normal means Many leading conjurers are Spiritualists Others are interested in psychic research

In 1892 John Nevil Maskelyne wrote the following letter to the Italian Spiritualist paper, *Annali dello Spiritismo*.

> *"Inasmuch as for several years I have been recognized as an opponent of Spiritualism, your readers will, without doubt, be surprised to learn that I have become a believer in apparitions Many facts similar to those related by your correspondents have been verified in my own family, and in that of my friends, in such a way that I have been forced to surrender to the evidence of truth and to acknowledge my error"*

I myself heard a statement similar to this made by John Nevil Maskelyne from the stage of the St George's Hall, London (or the Egyptian Hall, I forget which), in 1910 about which correspondence appeared in the old *Daily Chronicle*

But to admit the paranormal is one thing, to accept every psychological manifestation as the work of discarnate spirits another. It is painfully evident, to me at any rate, that much mediumship, especially in the category of trance control with its pontifical sermonizing and fifth-rate moral

uplift, is a case of religious and other frustration finding a sympathetic outlet. Failing proof to the contrary, of which in my view there was none in all the seances (some twenty or so at which the most eminent and successful mediums the movement could find in this country were studied), the "spirit-control" impresses me as being a clear case of dissociation, that is to say, dramatized sub-personality.

In general, I refrain from using technical terms current in modern psychology because I do not know the subject well enough, but I am sufficiently familiar with the literature of psychology to understand that "control" has all the marks of that neural "conditioning" about which a good deal is known by science today, but about which the rank-and-file Spiritualist is usually ignorant. Of such dramatization our dreams provide evidence and, if these are not enough, Freud and the rest must be consulted. Authentic cases of complete and partial dissociation are fully described and studied in psychological and medical literature. There is nothing discarnate about them.

I fully accept "continuity". I believe that "we go on" although I think it very doubtful that we do in the sense and in the way that Spiritualist philosophy describes. The scientist J. B. S. Haldane has put on record a mathematical argument for what he describes as "little to be distinguished from a future life" which, in effect, consists of the proposition that if mind is to be explained as a product of material "conformation" (the materialist's case) then it follows that recurrence of suitable conformation (molecular arrangement) is the same thing as recurrence of "self" in some sense. Inevitability of recurrence constitutes the mathematical proof.

Be that as it may, I agree with Professor Joad that "there is some evidence that in respect of our unconscious selves we are all one; evidence, that is to say, that it is by consciousness we are cut off from one another and become separate individuals, but that underneath consciousness there is a vast unconscious reservoir of wishes, thoughts, desires, hopes which is common to us all."

The subject of telepathy is receiving just now a good deal of public attention. People are encouraged to believe that telepathy is a trick of thought-transference that can be done at will by certain persons as a popular entertainment and that thoughts are self-contained objects of

dispatch like wrapped-up parcels to be sealed and delivered

What is probably more correct is the view of Whateley Carrington that "telepathy comes, not by transmission of ideas, but by community of consciousness, not by the transference of a thought, but by identity of the thinkers" It is not generally known that for some twenty years at least the subject has been one of close experiment at universities and scientific centres in many parts of the world by scientists who have taken the greatest pains to render their work unimpeachable

Hundreds of thousands of experiments have been made, checked, and counter-checked, with documented results that are millions to one against chance or coincidence Drs Soal and Rhine are names well known in connection with laboratory tests of the most rigorous and painstaking order

Now, if it is a fact that under the threshold of conscious personality we are all one, there is to be considered its philosophic importance The view carries with it the suggestion, not of fully fledged and sharply outlined thoughts arriving and departing like passengers at an air-port, but of a psychic "field" And this explains or rationalizes the moral urge of man as no other ethical theory does, certainly as no theory of mechanical social "selection" does Above all, the existence of telepathy (which I hold proven) affords very strong evidence of immortality in itself, for if minds as we know them separately are interpenetrable it seems to follow that, so long at any rate as mind exists at all, I exist "All one", even at subconscious level, implies, I think, that simple awareness continues, personality as such (we know this personality so very superficially) comes, perhaps again and again, to be rebuilt in relation to a higher or lower "trajectory"

No great intellectual difficulty arises from the conception of a psychic field, at least none more than arises always from profounder issues of meaning Modern steel ships have their compasses adjusted to the magnetic field of the earth according to the direction in which the hulls lay when building in the slips What the magnetic field is "in itself" we know no more than we know what space-time is "in itself", or anything else But we know it exists because of what it does, which is in fact the only rational meaning of the word "existing" Separate magnets exist because of

the generalized field which in turn belongs to the electromagnetic constitution of the universe at large. Telepathy, the submerged iceberg of Freud, racial memory, well-established principles in biology and genetics including the fact that, except in isolated pockets, every person living today is a descendant of every person living procreatively at the time of Christ—all these things, and more, point, irresistibly I think, to the conclusion that there is a psychic field just as there is a magnetic field, and that we are none of us as separate as we think.

Since modern Spiritualism began it has always been a question of how much of its phenomena might be referred to the subliminal consciousness. Now that so much more is known about the below-the-surface mind the possibility of a paranormal rather than an other-world explanation for much, if not most, psychic phenomena must not be put aside. It must indeed be rigorously pursued. Let us take an extreme case.

My friend Hannen Swaffer will tell me that he has touched and conversed with materialized spirits. Such evidence is not to be lightly discounted. But, in the literature of Spiritualism there are many instances where phantoms are those of the living and not of the dead. I remember an atheist friend of mine who had been induced to attend a Spiritualist meeting having his wife described to him and announced as being present, the clairvoyant "seeing" so precisely and vividly that he ran home in panic to find the lady very much alive. Both materialization and clairvoyant description bring in the theory of departed spirits, but phantoms of the living, seen whether by sitters taking part in a materializing seance or by the spiritual eye of the clairvoyant, are alike not only mysterious but inexplicable upon that assumption. Materialized forms are alleged to appear in recognizable character and give satisfactory evidence of identity. True, but they are supposed to be built up in a substance derived from sitters and medium. This is called "ectoplasm" and seems to belong to a borderland between spirit and matter constituting some subtle vehicle of quasi-physical nature. In the light of such a claim the suggestion gains strength that apparitions, including the ghosts of haunted houses which are not to be dismissed as being in every instance the product of superstition, emerge from a region or domain that should be called

neutral in respect of the physical-mental order If the "spirit" figure so materialized requires a contribution from medium and sitters for its form, it may be that mind and character, too, are contributed through the agency of the telepathic or psychic field If telepathy is true, all knowledge is available, past, present, and, as it seems now from the latest exploration, future

A thought occurs to me here A seed planted in the ground germinates, grows into a plant, and culminates in the blossom or new seed over a period of time, say an over-all period of six months for argument's sake Imagine the time required reduced to six seconds as it is sometimes pictorially reduced to sixty on the cinema screen by a camera trick There is nothing illogical or contradictory in the idea Growth can be expedited by chemical means It is only a question of time, and time, as a great physicist has said, has "something funny about it" But the six-second "materialization" in sunshine and open air would be a good deal more convincing than most of the spiritualistic variety, certainly more convincing than any that members of the Panel saw It would be called a miracle if the phenomena occurred rarely enough Nevertheless, there is nothing in materialization more "impossible" or more wonderful than the birth of a butterfly, and if a plane of existence is granted where matter and mind interact with, as it were, immeasurably greater flexibility—a psycho-telepathic field—there may be a better explanation than the one advanced Identity is not the difficulty—at any rate not so much—if telepathy itself, as Carrington suggests, is but another name for it

I am not unaware of the fact that all this is guesswork. It is not my guesswork, however, except in so far that I may have brought a number of ideas together in a popular form, which is what I have tried to do My reason for traversing this terrain is not so much to set up an alternative theory to Spiritualism as to indicate the emotional barrier erected by its devotees against intellectual arbitrament in making Spiritualism doctrinal and investing it with the platitudinous rags of a third-rate religious sect

Spiritualist religious jargon is peurile Take the word "vibrations" It is supposed to explain the *modus operandi* of spiritual communion, and like other "blessed words", seems to be soul-satisfying, not to say mind-obfuscating

Spiritualists use this word constantly without knowing what it means or understanding its implications in the least. Vibration is not a "thing in itself", something must vibrate. But what? I asked the question rudely, and got the reply that I expected and perhaps deserved. It was that all is vibration, electrons, atoms, the filaments of electric light bulbs. And the entranced medium who gave me that reply did not see that she was really putting the case for materialism, and of a materialism so out of date that it attributes the psychic wherever it is demonstrated to—yes, these very vibrations of electrons and atoms and molecules seen in electric filaments! Mind is relegated by third-rate materialists to cranial jitterbugging, and Spiritualists fall for it—by implication. "Vibration" is the very earmark, diagnosis, and cloven hoof of materialism.

Now, it is true that when mathematical scientists talk about such things as waves they confine themselves to movement, and discard that which moves as irrelevant. They obey the rule known as "Occam's Razor" in philosophy which forbids unnecessary multiplication of entities or the recognition of entities extraneous to the purpose in hand. Thus we do not hear much these days about a physical "ether" although we do hear a lot about the space-time continuum which seems to have substantial reality enough to exhibit curvature. I would not know. Clever persons who would not be out of date for worlds produce oranges and cricket-balls to prove to me something I already do know, namely that spherical geometry gives results that are different from those of plane geometry, and go on to argue, while they measure the basic angles on a balloon, that parallel lines are quite capable of meeting, notwithstanding that "not meeting" is part of the definition of a parallel, and forgetting that the so-called angles are not angles at all but points which, when "produced", immediately take on the curvature of the object and (since the lines are latitudinal) become not parallels but something else.

All the same, I leave these things to the mathematicians. I understand as much about the subject as the clever persons to whom I have referred, which is minus nothing. All that I am sure of is that the most relative thing about relativity is its relativeness. The Spiritualist jumps in where critical devils like me fear to tread—into the metaphysical

trap. In post-session conversation I was told that the vibrations were not those of matter but of life, and this, immediately after life itself had been defined as vibration! Just what a vibration of a vibration is I do not know, but suspect that it has something to do with a famous Cheshire cat If Spiritualists mean that spirit is in a different category from matter, which is an arguable hypothesis, "vibration" is definitely not the word Our friends get a lot of fun out of "you scientific people" uttered with the scorn of a Mrs Pankhurst trouncing "You Men"! I don't wonder!

In the mental phenomena displayed there was some evidence of paranormal cognition, extra-sensory perception (knowledge obtained otherwise than through the normal senses), "Psi", or whatever it may be called In the physical phenomena there was none. This, of course, is only my own opinion for what it might be worth It seemed to me that in nothing of what took place, mental or physical, was there *the slightest evidence of a future life to comfort* us poor mortals living in the ante-chamber of death (as R. W Dunne says)—should we require it There is, of course, the consideration that valid phenomena of any abnormal *character might be held to strengthen one's hope* by dispelling the worst of one's alleged despair, but this is much less than the Spiritualists claim Let us examine the matter a little more closely

If a medium gives me a message about my past life, by way of clairvoyance (clear-seeing) or psychometry (object-sensing) or clairaudience (clear-hearing) and I know, or afterwards find it to be, "veridical", that is to say, true, there is no logical reason in the world why I should put it down to the work of a disembodied spirit. If "spirit", whatever that might mean, must come into the matter, by what law of inference are we called upon to go further than the medium's own property? The sub-normal world, if such there be, can be tapped, surely, by the mind already present without calling in some other mind I was told of an occurrence personal to me forty years ago Details and names were accurately given But why should I be expected to take it for granted that it was all done by a discarnate being in the form of a detachable "soul"? My mind or soul was available, too, and as free to roam through temporal corridors (albeit in Joad's unconscious nexus) as would be that of an inhabitant of "Summerland" The medium's

own spirit was also there It is confining mind to body (of sorts) in a very materialistic way to argue that past events can be revealed only by "someone who was on the spot at the time" Telepathy proves itself to be a much bigger and much more universal thing than a parlour game Omniscience is the possible ultimate fact of mind at large, the final word of reality Admittedly on all hands, a vast "under-the-threshold" exists, and it is more than likely that the subconscious is more open to paranormal exploration than the more limited conscious The point is that no genuine proof of discarnate agency (in the sense of dead persons) was forthcoming in all our investigations Unfortunately, there seemed to be no conception of what is required—to convince, not me, but the critical world

The technique of popular clairvoyance seems to be wide open to misunderstanding I do not question the power of the genuine clairvoyant to probe that subconscious which is, I have suggested, immensely wider than personality as we experience it But there is normally a good deal of "hit-or-miss" in clairvoyant demonstrations as well as much guessing, fishing, and eking-out "Is-it?s" and "would-it-be?s" preponderate The medium builds up as she goes, the good one with an occasional striking result The other kind trusts to a train of Jacks, Harrys, Freds, and Emmas to evoke the requisite initial response But there are some, invariably the non-professional, who are content, hit or miss, to let the spirits, if they are such, speak for themselves, and these provide the most remarkable results by far

Rank-and-file Spiritualists, to judge from their attitude and conduct, know nothing whatever about how much territory has been explored and even partially mapped out on scientific lines in straight psychical research as well as in orthodox psychology Spiritualism is a gospel to be believed, not a subject of research to be probed Its adherents, so it seems, do not know what constitutes proof, and their state of mind on the matter is highly emotive While evidence is available sufficient in amount to constitute a formidable case in favour of what may be properly called a spiritual universe, though not necessarily of one in any sharp antithesis to our own familiar world, we are invited to accept an inferior substitute for religion because the Bible, as one medium said, inculcates faith Which would be as good a reason as any for seeking spiritual comfort (if that

were the only object) in the warm and colourful bosom of the Roman Church or even in the Draconian cloisters of a Tibetan monastery

Upon the physical phenomena shown to us I feel it painful to comment I leave the spirit-healing sessions to medical members of the Panel and confine the term "physical" to the direct voice

I must record my impression that on one occasion, and on one only, it appeared that a voice came from the trumpet and was somewhat metallic in sound On the same occasion (by far the best seance of its kind) the trumpet was violently thrown over, although I should have thought that a movement of the medium or of any one of his supporters could have been detected in spite of the gramophone Of trumpet demonstrations in general one can only say that the darkness is highly questionable because it is a ventriloquial commonplace that to determine the direction from which a voice comes when in pitch darkness or when an audience is led to expect a particular source is next to impossible I must risk the charge of materialistic hostility in pointing this out There was striking support for my view, already expressed, that there is no proper idea of what evidence means Much was made of the fact that one direct-voice medium offered the test of having strips of adhesive plaster placed over his lips to prevent them moving and so to dispose of any charge of using ventriloquism No one seemed to be aware of the fact that speaking without moving the lips *is* ventriloquism! I have seen the late Arthur Prince demonstrate with adhesive tape for the entertainment of a private circle of magicians—private because drawing attention to the lips as such in public is bad magical technique

To my mind, it is quite lamentable that the non-judicial take as evidence that which is nothing of the kind even if associated with paranormal phenomena that might be explained in other ways or might not I insist that our job as a Panel was to collect evidence to support Spiritualism in its claims if any were available, not to register or succumb to emotions A very significant remark was made by one medium who complained that he was tired and was losing power It was "If I go on I shall start guessing" That's the trouble, and, apart from the definitely "phoney", it is the particular trouble with the paid medium He or

she is expected to give value for money and the temptation to "start guessing" is very strong The only way to put the thing right as I see it is for the organized Spiritualist movement to find some economic guarantee for its mediums in return for certification or other responsible accrediting, the fees being paid into a common fund

SIR JOHN ANDERSON, BART.

MANY of my friends and followers have asked me why I decided to accept the invitation to sit on this panel of investigation into Spiritualism

In my opinion, this investigation was a very broad-minded gesture which will have, no doubt, a great influence in widening interest in the subject

My answer to those who have questioned is that I knew that this would be an opportunity for me to help the general public to become conscious and interested in the reality of the Unseen Power that surrounds us

I must say that it was most interesting to me as I sat with the other members—all with their varying degrees of thought—and observed their reaction to the various demonstrations, which were given by many well-known mediums, each possessing a particular psychic sensitivity

I was also glad to be given an opportunity of expressing my own personal views regarding the various manifestations that were presented

I know that my host of followers throughout the world, who regard with reverence my philosophy of Right Thinking (which is based on the science of Thought, which, of course, recognizes the reality of Psychic Force), will be fortified to seek and find still further proof of the Truth of survival of personality in other worlds, beyond the sphere of material life

During my life I have always been what may be described as a "Searcher" and this attitude of mind has been stimulated, from my earliest recollection of being able to find many things of profound benefit, through allowing my freewill to link up with an outer-thought radiation of inspirational power of Divine Thought or Spiritual Guidance, etc

I realized the effect of this power long before I had the opportunity of discovering the science of its operation

All my life I have been a realist, and never take for granted anything that I have not proved, and my investigation into the reality of the Unseen Forces has been based on this principle

A doubting mind is fatal to the successful accomplishment of any task. To doubt the reality of an after-life is fatal to the complete happiness of a human being.

I have proved to myself that there is a power of Good Purpose, and one of Evil Design, which attracts humanity to express one or other, according to the thought-desire of each individual.

I know that it is an unassailable truth that thought rules us all, either for constructive or destructive purpose. We have the choice of pulsating with Good Thoughts, or Ill Thoughts. The Good Thoughts can only give us satisfaction, and the bad thoughts, misery and despair.

Where do these thoughts emanate from? My answer is, from the past, present, and future. The soul, or ego, is eternal, and therefore all the thoughts of the past, present, and future are existing in the Etheric and Ethereal mind-spheres.

These great minds of the past are still seeking and finding. The lesser minds of the past are still evolving, and the elementary minds of the past are in a mass form and unable to express an individuality.

From time immemorial, human beings, and all other forms of life, have been mediums, as are the present forms of material life still reflecting varying degrees of mind, from these unseen thought spheres, so I am inspired to give the reader what I believe to be interesting food for thought.

When "degrees" are referred to, in regard to man's proficiency, we are all apt to think of these as marks earned in various professions, such as chemistry, law, medicine, music, art, etc. These particular degrees have been compiled from time to time, by perhaps "A Board," which decides on the standard required to be given by the candidate to satisfy the examiners that he or she is worthy to be given a certain degree.

Of course, these standards which are required do determine that the successful candidate has reached the particular standard required for a particular examination.

The whole universe is therefore composed entirely of degrees, and is also balanced by degrees. The world at present is wavering under various degrees of evolution, some people being in an advanced stage or degree of knowledge, in relation to material inventions.

Whether the so-called civilized parts of this planet have

reached a true approach to positive advancement remains to be proved

We must remember that thousands of years ago there lived such people as Plato, Socrates, Aristotle, etc, whose psychic-degrees-of-mind were far in advance of the majority of people living at present on this old earth of ours

These great people had understood how to tap the outer thought-forces, and to reach out for the knowledge which was, and is today, radiating in various degrees, ready to link up with us all, if we so desire

People are all manifesting in various degrees of intelligence A perfectly intelligent person is never bigoted, for he or she realizes the immense number of things which are to be discovered in relation to each ego Also, they have the desire to try to solve the difficulties of life, and to try to obey certain laws of the Spirit or Soul, which they know must be obeyed

The law of cause and effect has been proved, and still is a law that cannot be denied by any thinking person Of course, there are many laws which are unseen, until man may disobey, or obey, and then get the result of breaking or following a law-force, which is always in operation, and acts according to how man uses it in relation to his own life, and often in the case of others who may come into his orbit

Man, as he becomes conscious of the great part he can play in contributing wisdom for his fellow-man to absorb, is, of course, a part or unit of a psychic-force of rarified quality, available to anyone who cares to be imbued with high principles

If we pause to try to find ourselves, in regard to the true-self-desires, we shall all admit that it is not the material-passing-shadows that build up our character, but something deep—a stirring, noble mind, which is calling us to use, and create, things within ourselves, to give us harmony within, and to those who are trying to find the way, too!

We are all pulsating on different degrees of mind, but as long as we decide to accept the best of our capability—the goodwill-degrees—we are true pilgrims following a star, which will accept each one of us, and we can thus make its light more powerful, as we add to the power-house of enlightenment for ourselves and our fellow-travellers

Great philosophers from time immemorial have given mankind a psychic-way to guide them through the vagaries of this earth-plane They have been, and are still, ignored by the majority of us Even the Classical scholars may read their works, but never try to emulate, what they may accept as a way to integrity, and the means of living a life of value to themselves and their fellow-beings

My own great countryman, Thomas Carlyle, found, and gave, great philosophy to us, and our American cousin, Emerson, also did the same, and countless other psychic-students of the past tried to attract man to realize that Spiritual matters are the most important things to man, for without obeying this law of Goodwill, nothing can become true or prosperous

There are, I know, a tremendous number of people in this country who are anxious to find something on which to base their trust and confidence for the future

Some people wonder what this life is meant for, especially those who have experienced so much frustration in their endeavours to try to carry out an orderly existence

We who think seriously realize that unless the majority of us reach out for the Spiritual guidance there will never be a perfect peace in this world Also, if the evil forces become stronger to such a degree of great majority, this world will most certainly destroy itself, by man destroying man, either by contact or by some form of mass-destructive weapons—created by man—through the necessity of invention to protect himself from his fellow-being!

All this could be avoided if man resolved to become a "Right Thinker," which I interpret as "A Man of Goodwill," for the benefit of those who might ask "What is a Right Thinker?" We must protect ourselves against a foe —but if man's thought became immerged into a brotherhood of Right Thinking, there would not be the necessity to make the possibility of war an important part of the life of man, woman, and child!

Today, five years after the last world war, nations are concentrating on weapons, and people are under the fear of another conflict We must arm because we must guard ourselves against a possible enemy Perhaps there may be a chance for someone to stir up the minds of our possible foes, to realize that Thought makes hate—love—and Peace or War! No one can deny this Thought is the master of

the individual for Good or Evil. We are all servants, or slaves, to our thoughts, we should therefore all resolve to sever ourselves from the warped, dangerous thoughts, and choose to work with the constructive thoughts which give us courage, and reward of serenity in our Eternal-egos.

People are, in this country and other parts of the world, at present inclined to ignore all forms of religious thought. Some people blame "the Churches" for this state of things, which, in my opinion, is most unfair. The representatives of all religions always welcome people who may go to any church.

After all, every religion is based on the Psychic, and recognition of a Divine Power, beyond one's personality. Christians especially do acknowledge that Christ came to save us from sin, and to show us the way to find God, and also, the most important of all, to warn us that our ego is Eternal.

It seems so irregular that any Christian should doubt that the soul survives, and can re-incarnate, by thought-pulsations, into those on this earth. Christ warned us to beware of Evil thoughts trying to attract and use us for ill purpose. His great resistance to Evil was made positive when He uttered the words: "Get thee behind Me, Satan" —when an Evil thought-influence tempted Him on the Mount. Why should any self-called Christian dare to question the possibility of Christ's teaching to be incorrect? If any "Christian" does do this, he or she is indeed a hypocrite as regards claiming to be a Christian!

Every religion is worth concern for us all in this world. We Christians have found a way to follow His Light—so let us be noble and never judge other forms of worship than that of our own.

The Brotherhood of Man is possible if all followers of the many religions of the world would act up to the principle of goodwill. Christ has an invisible Church, and subconsciously millions of souls are unwitting members of His Domain of Thought, for anyone who has affection for his fellow-man, and true concern for his welfare, is a member of the Christian thought-sphere, and a disciple of Christ. Name does not really matter, it is the carrying out the principle of Christ's teaching that does matter. If a person may not have learnt about Christ, but carries out goodwill towards man, he or she is undoubtedly allowing

himself or herself to be guided by a psychic power, which can only influence them for Good Purpose

I could never regard Spiritualism as a religion, for it seems to have a much wider mission ahead of it I regard it as a branch of the tree of Truth, to stir mankind to seek, and find the Truth of survival, and of the many pitfalls that await the individual and the world's destiny

Unless the Spiritual part of us is put first in our lives, our material cannot manifest in orderly fashion This is a law of "cause and effect", for if the thought is warped, so will the effect be acted, by the receivers!

We should all endeavour to be on guard, to be selective in what thoughts we permit to become active in our material life Thought is the power which determines everything in our life on this globe I wish that parents, guardians, and teachers of the young, would study the science of thought, and then start to teach their pupils Right Thinking I am sure that this would be the means of reducing much of the delinquency of today

To be a Right Thinker, one must be a person of "good-will", which is another title for the Spiritual thought of Good Purpose God's will, or Psychic-Force of Good Thought, is always ready to attach and work with all who choose to turn to Good Thought

With regard to my attitude towards Mediumship, I must frankly admit that some of the professional mediums are not being influenced from spheres of rarified-mind, but nevertheless, most of them are absolutely genuine These people certainly do give proof of survival in most cases Personally, I feel that trivial messages from a departed soul or souls are not of much value to the receiver, but in many instances, do console a mourner and give fresh courage to know that the soul is absolutely Eternal We are, of course, assured of this by Christ, and this Truth is the bulwark of the Christian faith

People do like to be assured by getting a message from Heaven, or perhaps Hell, from departed relations or friends, through the channel of a medium, who has been endowed with one of "those" gifts which Christ mentioned

Healing is another form of "those" gifts, and we get it through our own educated medicos who are inspired—just as is every other body—from the "mind-spheres of medicine and surgery" The natural healer is inspired like-

wise, but he or she, inevitably, has not had the advantage of "preparation for the job", therefore is "gifted", but has not been able to learn the basic rules and technique of this great force of healing A lay-healer is just the same as a composer of tune, who may be able to hum or whistle an air with a delightful melody, but has not been able, or perhaps not capable, of learning the rules of writing or playing music on an instrument, by reading Sometimes this type of person can play "by ear", but could not explain anything about composition or "talk music", but is nevertheless a composer!

The healer may find a cure, and some have actually done this mending of the body—just as Christ did If Christ had been educated He could have done even more wonderful things

With a thorough understanding of a subject man can link up with a source of thought, which can operate positively through him, and reflect the wonders yet to come, from the Generator of All Wisdom—the Psychic Force of Progress and Goodwill!

Christ told us that we could do greater things than He did—so why not try? He would not have put this thought to us if it were not true! None of us Christians should dare to question anything which our Leader, Christ, taught, for He was Truth, and reflecting God's will through His mediumship—just as other great leaders of Spiritual Thought try to make men recognize the power of the Psychic-Forces for the benefit of mankind

We are all subject to be ruled by outer-forces, which claim us for Good or Evil during our sojourn here, and in the hereafter If people would mould their thoughts on the knowledge of this principle, the world would surely develop into a reflection of Heaven

It seems futile to me for people to waste good time trying to prove that "Most things relating to Spiritual Thought are not true, and non-existent!" Of course, prophets of the past—Christ, Socrates, Galileo—have been tortured for being truthful, and it has now been proved, that all were absolutely true in their decision to tell the world of the great things to be found in the universe, by tapping the Unseen-Psychic-Force, which gives freely to man the revelation and great fortification of courage, to march on, and to discover! Discover!! Discover!!!

We are all manifesting in various degrees of mind-consciousness Some on a high rate of radiation—others very slow, and unable to find an ordered way of expression

Good purpose is something which is part of the Thought-force Valuable to us all, as all things of virtue are valuable to the soul of man, and are part of the "Spiritual-Law-Of-Construction-For-Good-Purpose"

We can all shine in this life, according to "our-own-lights", which are of great value, however large or small, provided that we brazen our torches with "Right Thinking", "Goodwill towards men", and "Obedience To The Spiritual Law" Nothing else matters, for if we all resolve to unite in a mass thought of consideration for one and all, we shall be finding and collecting the "Brotherhood-Of-Man" which must be manifested in great strength to ensure a lasting and general peace in this now harassed old planet of ours!

Whatever I may be inspired to write in prose or poetry forms, I claim that I receive the thoughts to enable me to express them from an Unseen-Psychic-Force I am most grateful for this gift, and I feel that there are thousands of people who could find wonderful inspiration for their various desires, if they too would search and find the truth of "Right Thinking"—this being the key to find bliss unknown before, and the door will be opened for further proof, and discovery of the Eternal-Psychic-Thought-Force, which has been pulsating before the beginning of everything, on both Heaven and Earth

I know that this is all true, and have proved it to myself Whether others accept it, is not my business My purpose is to tell the world the Truth of an Eternal-ego, and also the science of the thought-rays or waves, which influence us all for Good or Evil

Just as a Doctor might tell a patient what to do, to regain health or keep healthy, so do I tell my fellow-beings of a way to regenerate, or keep their Spiritual-thought-energy in good health!

Anything which is creating harmony and Goodwill is of course "In tune with The-Perfect-Mind-God" Anything which is destroying Good purpose, is Evil, and part of vile-thought-rays, which may be described as from "The Spheres of Hell-Mind"

No one can deny that thought is the origin of every-

so I hope my readers will enjoy my "Trip-To-The-
-Power", in company with my Spirit-thought rays,
at they will perhaps consider my findings, and seek
ve through a similar journey, that "The Psychic
' is real, and will give them comfort and courage to
iers of what they have found, in their search, and
id the clarion-call to all and sundry, to "seek and

ave just been impressed in my mind, that I should
brief outline of my experiences in relation to public-
m mediums, and those of the private-world mediums,
ie Spiritual desire to contact the unseen forces, and
many forms of phenomena
ave had remarkable evidence of survival, and also
es relating to personal matters from the platform-
ms I have sat in circle in my own home, and received
es of significance from private mediumship, done
y for the service of the Spirit Forces, with no desire
y gain I have experience of phenomena which were
iudulent, but very distasteful to me personally, and
opinion, not suitable for anyone, especially a weak
For one has to put up a strong barrier of resistance
thing of a vicious nature, whether in this material
or from the Mind-pulsations of Evil design I pitied
ediums who were so constructed only to be able to
t warped-thoughts-of-past-entities
iave often told persons of this particular reflection
Unseen to change their wave-lengths, and connect
Higher-Spheres of thought, and then they will pro-
ind perhaps be the means of persuading, unwittingly,
ooi wandering souls in the Etheric, to seek for the
ial spheres, and so find a way to relieve themselves
discordant Evil rays which are tormenting them
iere is undoubtedly an antidote for everything on this
which is a menace to mankind The antidote for
g Thinking, is Right Thinking, and it should be
ibered, that this is an absolutely unassailable
ient
uth cannot be made a lie, any more than a lie can
ide Truth Truth conquers eventually, as we have
l by the past sages, who have prophesied many things,
were at the time regarded as absurd and fantastic
e are inclined to believe lies, in front of Truth!

Those who have found Truth, must not be downhearted, because others may doubt Those who doubt are absolutely losers, for they are missing something others have found to be a force of inspiration and guidance through life Just as haters suffer tremendously, so do wrong-thinkers, for everything that brings misery and despair, is the result of breaking a law of Perfect Mind

Now I am getting to the end of my word-limit, so will soon have to close, but before I do so, I would just like to tell everyone how very glad I have been to be able to write this small article I know that it was not by chance that I was invited to become a member of this particular panel It was no doubt pre-arranged from a Psychic-Sphere, something which desired to use me as a Herald, to emblazon the Truth, and still continue as a searcher, as long as I am desired to be the receiver of Truth, from the Unseen Power of The Spirit

STOP PRESS

I have just received a message for all of us—so I am going to give it to the world, some may receive it with joy, others may reject it, but it is a message, and must be given "THINK ON TODAY, THINK ON TOMORROW, THINK RIGHT ALL THE TIME, AND VICTORY OVER EVIL WILL BE THE CERTAIN RESULT"

LAURENCE J BENDIT, M A , M D

I HAVE for a long time been interested in psychical research (or, as it is called nowadays, Parapsychology), although I have never been a Spiritualist

Psychical research and Spiritualism are not to be confused Psychical research is a scientific approach to the less-well-known powers of the *psyche,* that is, the soul or mind, and only concerns itself with ghosts and visitations in so far as they are considered as matters for study and careful investigation It also studies the psychic capacities of people, that is, those of perception otherwise than by the five physical senses (clairvoyance, telepathy, and so on): capacities now scientifically called those of *extra-sensory perception* (e s p , for short), and the power of the human mind to affect physical objects directly, without the use of the nerves and muscles These last are labelled *psycho-kinesis,* or, in shortened form, p k

Both these orders of mental activity are, together, called *Psi,* which is looked upon as one of the faculties of the mind Moreover, in order to understand psi phenomena, investigators realize that there is a great deal to be gained from a sound knowledge of up-to-date psychology, so that the successful psychical researcher needs also to be a serious student of psychology, and especially perhaps of the analytical side of this subject

Further, psychical research has nothing to do with religion or the study of the *Pneuma* or spirit, but many workers are coming to the point where they realize that, unless there is something which can be equated with Spirit and which is *not* the same thing as mind, psyche, or soul, many things remain unintelligible

It is worth making the contrast between Parapsychology and Spiritualism because the latter is, in effect, a religious cult, centring largely round people called mediums, who are thought to be especially chosen and endowed with exceptional gifts It is claimed for and by them that, using *psi,* whether as e s p or p k , they put living people in touch with their dead and give them messages from them These, because they come from "the Other Side", are by

that very fact deemed to be of almost holy origin and have to be treated with great respect, no matter how trivial and even utterly nonsensical they may be

Some mediums, as is well known, work in a state called trance, and in this state they are believed to be taken over by their "guide", who invariably implies that he is somebody of exalted nature, using a specially privileged human being in order to convey spiritual teaching to a group of the elect among men This in itself is suspicious True spirituality is always humble with a genuine and not a mock humility, and claims nothing for itself. Nor do spiritual teachers flatter their disciples any more than they would humiliate and discourage them

Sometimes the medium is supposed to be controlled in such a way that the guide, or the other dead people whom he ushers in to the medium's body, speaks in his own voice (either using the medium's own vocal organs, or else through a metal megaphone) so that those present can recognize that voice. Sometimes, also, the mediums are supposed to produce physical phenomena, moving objects about the room, producing materialized forms of the dead, and so on, without their using their own bodies to do so

Of these three types of medium we had examples during our investigation Of the first I can say categorically that in my opinion not one produced any evidence at all of there being any discarnate "spirit" (soul would be the correct word) present; or controlling them

The second was equally unconvincing, and despite the opinion of one or two of those present, that at one moment the voice of the "spirit" came through the trumpet and not from the medium, I myself heard nothing which could not have been spoken by the medium himself

As to the third, I have little doubt that there have in the past been rare occasions when genuine physical phenomena have taken place under test conditions, but the demonstrations we were given showed only too blatantly the very fleshy mechanism by which they were brought about

My wife, incidentally, who has sat in hundreds of seances, has only a very few times seen genuine physical phenomena, and these only on a small scale She has seen many cases of both conscious fraud and unconscious make-believe

The most satisfactory sittings we had were with those mediums who did not go into trance, but were said to be demonstrating clairvoyance or "psychometry" in the waking state, and this satisfaction was only relative, owing to the sketchy and erratic way in which they worked. Not in a single instance, whether with them or any of the others, was there anything which ordinary telepathy would not explain

For, the medium might say, "There is a spirit . " and then describes somebody recognizable as (let us say) the dead husband of one of the sitters But the probability is much less that the actual dead person is present than that the medium has picked out of the mind of the widow the memory picture of her husband's appearance, mannerisms, and so on The fact must always be remembered that if one has once seen something or somebody, that memory remains indelibly printed on the mind, and "forgetting" simply means that the memory is not, for the time being, in the field of vision It is not deleted.

Moreover, it seems that, in many cases, it is easier for the medium to tap the things of which a person is not consciously thinking, at a given time, than those on which he may be concentrating

These things make the critical and objective mind ask, how much of the claims of Spiritualism is valid? Does it appeal solely to the unintelligent? Or is there something more behind it—enough, in fact, to have caught the interest of at any rate a number of people who, in their ordinary sphere of life, have proved themselves to be both competent judges and anything but fools?

To answer this we have to look at the beginnings of the movement, when it arose as a salutary counterblast to the deadness of nineteenth-century materialism, both in science and what passed for religion

It expressed an urge to try to find out something more about the mysteries of life, of birth and death, than this science on the one hand would allow On the other, the mechanistic idea of religion and salvation was felt not to ring true or to offer a valid answer to the discoveries of science.

As such, Spiritualism began as a healthy movement But it naturally lent itself to something more than an unbiased scientific approach, since it seemed to offer those in a state of emotional disturbance from the loss of relatives or

friends, a promise of comfort. Since those early days, much of the scientific side has become obscured, and nowadays the genuine inquirer who may want to ask pertinent questions finds himself rebuked in no uncertain terms by the alleged guides or controls, and is told that his very scepticism prevents him from finding things out. This, in reality, means not only that the clear-cut mind is too positive to create the emotional atmosphere in which the medium feels at ease, but suggests that he must first believe in what the medium is going to say, and only then can he be shown what is worth while: in other words, conversion must precede the finding of grounds for belief.

The difficulties are obvious. Yet, while it is undoubtedly true that certain types of mind are calculated to destroy or prevent anything constructive from making itself manifest, it is equally certain that there are other people whose clarity of thought is in no sense biased against the medium and which therefore cannot be validly held to be an obstacle to that medium producing his wares. Yet even this type of "open" scepticism proves too much for Spiritualistic circles to absorb.

It may be added in parenthesis that the suggestion is likely to be made that it was the disbelief of some members of our Panel which prevented us all from getting satisfactory results. This does not hold water. There are innumerable reports of seances held under what are supposed to be ideal conditions, yet none of these contains anything particularly edifying, and indeed all seem monotonously alike, and in most ways to be on exactly the same level as what we ourselves have seen.

In short, from the first and truth-seeking phase, the movement has become largely one of seeking emotional satisfaction. Has developed into a cult. Why then do so many intelligent people believe in it? The answer seems to be that a man can perhaps be a scientific or an objective judge only when his emotions and personal life are not touched. The moment they are, he falls a victim to wishful thinking and tends to lose his critical faculties. This is patent in a good many cases, where the investigations of people considered to be of high standing in the scientific world, fail to maintain those standards the moment they take up with matters of psychical research. For psychical research, like Spiritualism, touches people very intimately

It concerns itself, not only with powers of extended perception, but also with such things as the survival of man after death, and similar problems, which, to many people, are a source of worry and anxiety even if they do not admit it to themselves. And when it comes to trying to make contact with some loved person who has died, the emotional side tends to be so strong as to unbalance even the most sober judge. One need scarcely add that, for one person of clear scientific mind in the Spiritualist movement, there are scores who are not trained to be objective, and others who feel that objectivity in such matters is worse than useless — it is actually wicked and practically blasphemous.

In short, Spiritualism is not a thing which stands up to investigation. To believe in it, one has first to want to believe and then to refuse to allow oneself to be critical when one is in the movement. This may seem at first sight harmless enough, but if one looks a little more deeply one has to see that it is not so innocent a thing as one thinks.

The encouragement of credulity does nobody any good, it is as bad, or worse, than encouraging cynicism and total unbelief — worse in that when one is totally unbelieving, one is pulling all the time against a natural and healthy urge to find some kind of constructive philosophy of life which, sooner or later, may carry the unbeliever into a healthier frame of mind. If one is credulous, nothing short of some severe and probably highly painful shock will get one out of the slough of emotionalism, and then, perhaps by reaction, the one who hitherto believed too much finds himself disillusioned and naked, and unable again to find any foothold from which to look positively at life.

This applies, of course, to other creeds than Spiritualism, in which the adherents are not allowed to use their intelligence or make their own valuation of things.

That, in my opinion, is one aspect of the damage which Spiritualism can do. There is another, which is that while it encourages the negative attitude of the rank and file, and tends to make them complacent because of the flattery which the medium gives them, it encourages the medium to be dishonest. I say this in the full knowledge that most mediums are people who are animated by the highest principles of integrity, and who genuinely try to give out nothing but the truth. Moreover, as people, they are for the

most part very pleasant and nice and very few succumb to deliberate fraud, but if they do it is because they have given way to the temptation which is always before the medium and which, fortunately, most of them resist successfully.

It must be realized, too, that the medium is judged by what he produces: the more startling this is, the better the medium is judged to be Thus, if trumpets float about the room, if objects are moved, the medium is thought much of If he can produce anything which shows even a small degree of "psychic" power, then this, too, is something worth while in the eyes of the faithful

There are, however, many mediums whose power is extremely mediocre if its exists at all, or it is so erratic and uncertain that, in order to give good value, something else has to be done Consequently it is of great assistance if the guide is a person who can speak with authority, and many mediums have such guides Sometimes directly, sometimes by broad hints, they tell one how wise and important they are, strongly suggesting that the highly platitudinous moral talks which they give are derived from higher spiritual spheres

Another line of approach is where the guide talks of Great Things (the capitals are implied) which are to happen in the future, and in which the medium and the circle around him are to have a special part

Yet another is where the guide tells graphic stories about Atlantis or about ancient history, as if he himself belonged to it and had seen these things with his own eyes The guide who told us that he had been a fisherman in Galilee and had seen and spoken often with Jesus was a case in point· his identity was scarcely concealed behind his pseudonym, and he combined claims for himself with a suggestion that his circle, too, consisted of people comparable to the Apostles of old, and so were worthy recipients of great truth In this way a strong assertion of the guide's importance was coupled with flattery to those present, making a highly palatable mixture to those ready to receive it Yet, when one examined the contents of the sermon there was nothing in it which one had not already heard a hundred times, and when the guide was challenged on historical matters, he fell down rather badly

Another thing which is very noticeable in some cases is the skill with which a clairvoyant will extract information

from the person he is addressing he often makes a statement which that person will either accept or deny, and in either case helps to build up the picture which the medium wants And if the medium does not get enough, he is often very skilled in dropping that particular person and passing on to the next, excusing himself more or less by giving it to be understood that the "spirit" he is describing has gone, or has not the "power to get through", or that somebody else has interrupted the proceedings

This is not deliberate fraud, but is an instinctive and, I am sure, quite unconscious means of supplementing the small degree of clairvoyant or telepathic power which he can really control and use

It amounts to this the medium depends for his position, and sometimes for his livelihood, on being able to make a show Few people will easily relinquish a position of eminence, even in a small circle, while one who depends on his mediumship for money must be faced with real anxiety if he should begin to doubt his abilities or fear that he will no longer impress So he tends to indulge in unconscious wishful thinking and in some cases crosses the border from this into deliberate and thought-out fraud

Apart from all this there is, for the medium, a serious problem concerning his own mental health It is now fairly widely accepted that e s p at any rate in the form of telepathy is a natural and normal endowment of the animal kingdom this was clearly stated once more in no less a gathering than the British Association meeting in 1949 It is, however, completely unconscious and uncontrolled, and regulates instinctive patterns

The role mankind has to play in the great evolutionary pattern can be summed up as developing conscious control and self-direction, not only of the world outside himself, but also of all the powers both active and latent in himself *Psi* is one of these

Many mediums, if they should show any such power, however, tell one that they have no control over it they have to wait for a mysterious force they call "the power" to flow, before it comes into play. More than that, they try to develop it by putting themselves and the control of their minds aside, so that it works only in an automatic fashion In short, they try to put the clock back They are working against the evolutionary stream and glory in doing so!

It is not to be wondered that there are so many disasters both in physical and mental health among mediums—as every practising psychiatrist knows only too well

In reviewing the course of our investigation, I must not altogether omit to mention the mediums who professed to heal. There is a great deal which might be said about non-medical methods of healing, and especially about the difference between true "spiritual" healing and "spirit healing" such as is practised by mediums, but it would take too much space

I wish that I could, in this connection, be less negative than I have felt it necessary to be about the rest But, neither during the present investigation, nor at any time, have I yet seen a case where I was satisfied either that the diagnosis was correct or the treatment anything which could not be accounted for without having recourse to the idea of "spirit" help I have, moreover, asked several of my colleagues for their views, and they have been just as disappointed.

Naturally, the believer will blame this on the conservatism of the profession, but I am afraid this will not do among forty thousand doctors there should be at least a few who would face the truth, if truth there were On the contrary, one fails every time to get concrete evidence of cure, and usually also of diagnosis It is striking that not once in the course of many articles in newspapers and elsewhere, where miracles are claimed, is there ever a doctor who speaks in favour the diagnosis is made or confirmed by non-medical people or nurses, physiotherapists, and the like, who are not competent to do so

The reverse side of the glowing picture presented by the enthusiast, however, is that many people who have trusted the so called "spirit doctor" and his medium, have found themselves in very serious trouble which could have been avoided by the use of a little common-sense and a minor operation or a little medicine

My report, so far, is negative and hence no doubt rather depressing to some readers Many people are seriously concerned to find a true philosophy of life and an answer to its more serious problems which will help them to understand what it is all about I am convinced that this is not to be found in the modern Spiritualist movement they may find emotional comfort there, and their doubts may be

drugged by it just as other people drug themselves out of their sorrows with alcohol

They will not find truth, however, since truth is often anything but comfortable, in that it destroys one's self-satisfaction and one's illusions But it does not mean that the whole thing can be dismissed with an airy wave of the hand, if only because it is through Spiritualism that many materialists get their first touch with a wider view-point But this is only a first step, and the progressive mind soon finds that he has to go a long way further to find a less sensational but more rational philosophy—such a philosophy as that so brilliantly expounded by Aldous Huxley in his book, *The Perennial Philosophy*

Despite the failure of mediums to convince one of their powers, and despite the sketchiness of their knowledge of things super-physical, it is still on the cards that the dead do indeed survive after their body is discarded But, if so, in what form? And what part of them?

These are problems which are indeed serious enough, and orthodox religion does not usually provide any suggestion which is more satisfactory than that of Spiritualism Nevertheless, if one delves deep enough into the universal tenets of the perennial philosophy which lies at the root of all religious thought, we find some pretty clear distinctions, for instance between soul and spirit, and the assertion is made that it is only spirit which is eternal, soul being relatively temporal and therefore mortal.

How is one to find out? Only by developing one's own awareness, and this both in the direction of oneself, by learning to know oneself through and through, and in the other, by becoming increasingly perceptive of things around one To do this means, not self-indulgence and emotional orgies, but, on the contrary, vigorous self-discipline at all levels, physical and mental There is no other way

If one is serious and determined, one will gradually find that something grows out from inside oneself which gives one all the certainty needed Moreover, in the course of one's work one is likely to find that perceptivity increases and that one becomes aware of things beyond the merely physical appearance, and in a way which gives a deeper and fuller understanding than is received from merely physical data

One may not see auras or psychic visions, although

one is, in fact, becoming psychic· but psychic in a controlled and clear-cut way such as no amount of mediumship will ever give

There is no question of having to wait for "the power" to enable one to make a psychic assessment (which, in any case, is probably distorted or totally mistaken), but one has now a faculty which is an asset, in just the same way as is a clear-cut power to think

I have already suggested that science knows that "psychism" is a fact In laboratory experiments it is found that the best results are obtained when the subject is alert and fresh· that anything which diminishes that alertness, such as fatigue, illness, strain, boredom, drugs, leads to inaccuracy Mediumship comes into the category of these things because it involves a relaxation and relinquishing of conscious control

But another thing is quite clear, which is that the person who tries to cultivate psychic perceptivity as an end in itself gets nowhere—except perhaps into serious difficulties That is why the practices of the kind of yoga which works through body posture, breathing, and so on, are dangerous

There is only one way which is truly satisfactory and effective, and that is to be animated, not by a wish for excitement and phenomena but by a sincere and determined will to find truth at all costs For this means that one is searching for true spiritual vision, and the man who is animated by the desire for this will inevitably find it if he does not allow himself to be snared by the many delusions which seem at first sight to be so tempting and to promise so much

There is a vast difference between Dead Sea fruit and the Golden Apples of the Hesperides

MRS CHARLOTTE HALDANE

I HAVE met few men, and no women, who at some time or another have not been interested in magic, witchcraft, fortune-telling, and kindred arts. The vast majority of human beings are still superstitious. Most people are fascinated and terrified by these activities; and my experience has shown that those who scoff loudest at mention of any of these subjects are easiest to impress by a successful practical demonstration.

My interest in paranormal phenomena and my own experiments in extra-sensory perception arose almost by accident. In connection with a novel I wrote some years ago, I wanted to know what it felt like to discover certain events or happenings or things about people without using the normal methods for doing so. By normal, I mean the five senses by which we ordinarily apprehend and communicate with our world. These are, of course, seeing, hearing, touching, smelling, and tasting. But for the purpose of communication in the ordinary way with our fellow-creatures speech is even more important than these.

I planned to write a novel based on the story of the fairy Melusine, who was said to have changed into a serpent every Saturday night, and who was a great and famous sorceress.

Now it is a fact that an author cannot "realize" a character in fiction unless he or she "gets under the skin" of that imaginary person. I decided that to realize Melusine, reflection and imagination were insufficient, I wanted to know what it felt like to be a practising sorceress, to experience the emotions of such a person, to observe the effects on myself and others to be obtained by the practice of magic.

This was not simple.

Going to fortune-tellers, for example, and having my fortune told, would be useless, I must be the active agent in the matter. The only adequate method would seem to be to fall back on the single talent of that kind I might possibly possess, i.e. the ability to divine by cards.

I purchased a pack of cards commonly used by fortune-

tellers and sat down to read them But they gave me no information at all It became clear to me that this was probably due to the fact that I was trying too hard, that my conscious mind was too much involved to allow the necessary amount of mental relaxation to achieve success

This leads me to an important principle of the manner in which extra-sensory perception works This is not by conscious concentration but exactly by its opposite, not by holding on to thought more tightly than we normally do, but by letting go It is an elementary fact that all paranormal phenomena occur in this way Clairvoyants, including Spiritualistic mediums, when they go into trance, as it is called, are creating by auto-suggestion or self-hypnotism a condition in which they more or less put their conscious minds to sleep And only when that has been achieved can their subconscious minds function along paranormal lines

I decided, therefore, that I would invent for myself a similar technique by attempting to find out something about a person whom I had never met, seen or spoken to and probably never would I asked various friends to co-operate with me in these experiments, by thinking of someone known to them but not to me And very soon we began to get results

The technique had worked as a method for enabling me to identify myself, subjectively, with Melusine My book progressed satisfactorily But the divinations became an end in themselves, the pursuit of knowledge, or, rather, of a new form of knowledge, for which, as yet, I had found no name

We worked out a system for recording and checking my results As I told the cards, my statements were taken down by a third person, they were afterwards read to the telepathic contact between me and my unknown subject, and checked by the thinker, since I, obviously, could not know whether my information was correct or incorrect The method of checking was a primitive rough-and-ready one: a plus sign for a correct statement, a minus sign for an incorrect one

Before we consider what, as it were, was going on to enable me to produce these divinations, it is necessary to emphasize two points First of all, in all these experiments the ratio of successful to unsuccessful divinations was in the region of fifty-one to forty-nine, that is to say, nearly

half my predictions were wrong. I suspect that fortune-tellers and their clients invariably forget almost at once the prophecies that do not get fulfilled. In my own case, the use of the Tarot cards was simply a method of enabling my conscious mind to investigate the whole field, and I was just as interested in my failures as in my successes.

The second point was that it happened on several occasions that the friend with whom I was experimenting could not confirm one of my statements about the unknown person whose case I was describing. I asked myself in some amazement how could it be possible to *know* things, in this particular way, sometimes quite secret and intimate things, about someone I had never set eyes on.

I have made between fifty and sixty such experiments, of which I have written records. Perhaps it would be as well to make it quite clear at this point that the investigation was carried on purely as a hobby and not for any financial reason, as I have never been, nor do I intend to become, a professional fortune-teller.

One of my collaborators in these experiments in 1935 was John Morris, a friend who returned to India in the summer of that year to prepare for his participation in the third Mount Everest Expedition, in 1936. Whilst he was on this expedition, I had a remarkable dream in which I divined the fact that the letters being sent to their relatives in England by the members of the expedition were stolen.

As a result of this dream, on the following day I did a divination, wrote and sent a detailed account of both to John Morris, who at that time was, of course, still a member of the expedition. In the following summer a report appeared in the Press stating that when the members of the expedition had returned to their base they discovered that a large number of their letters to England had been stolen by the postmaster at Gangtok. I have given a full and detailed account of this story in my autobiography *Truth Will Out*.

Now, here is an example of another kind. In this instance, a woman friend of mine, whose initials are E. L., was collaborating with me. In the course of telling her about the friend of whom she was thinking, I said that when this friend was a small child she had had "a great attachment to a particular toy, I think a woolly animal or soft, not hard, doll."

This statement could not be checked at the time by E. L., who had not known this friend until they were both grown up So I asked her if she could find out from her friend whether there was any truth in it or not She did so and came back with the following story. As a child her friend had been an infant musical prodigy At the age of four or thereabouts, she had gone in for and passed a musical examination. Her father had thereupon asked her to say what she would like for a reward She had chosen a small green woolly teddybear, which she had seen and coveted in a shop window for the past three months When E L asked her about it, she took her straight to a cabinet where she still kept this toy and showed it to her

What, then, goes on? What is the probable explanation, a purely rational intellectual explanation? In his book *The Yogi and the Commissar,* the distinguished author Arthur Koestler quotes one of the most eminent Cambridge mathematicians, Professor Dirac, as follows "All phenomena in space and time arise from a substratum which is not in space and time and entirely beyond measurable grasp" But the average person still thinks of Time rather as a series of three little boxes, labelled "Past", "Present", and "Future" with no connection between them If one holds such a crudely simple picture of Time, then it certainly seems very mysterious that one should be able to know the future as well as the past and the present But modern mathematics, astronomy, and astro-physics all tend to show that space-time is, in fact, much more like the definition given by Professor Dirac

But even if this definition is accepted, that does not, of course, explain how any individual human mind can, as it were, tap or get into touch with other minds or even isolated events in this particular dimension Now, as I suggested before, these results are not, as a rule, achieved by the conscious mind, but by a part of the human mind which is normally buried below the threshold of consciousness and which psychologists call the subconscious mind

A great number of investigations into the workings of the subconscious mind have shown that it behaves in many ways quite differently from the conscious mind For example, when John Smith thinks of himself consciously as John Smith his conscious mind is forming a mental picture

of a very definite person—himself—quite unique and absolutely different from any other person, including all the other John Smiths Nevertheless, John Smith's subconscious mind is, in fact, only one little bit of a general human subconsciousness which we all share, some substratum where the knowledge of all minds is available to those who have the technique for, as it were, tapping it—that is for either becoming aware of or taking part in paranormal manifestations

I think it would facilitate the understanding of this particular quality of the subconscious mind to compare it to a different kind of mental activity about whose origins we also know very little

Take, for example, musical talent Here also there are all degrees, from the raw amateur who can drum out a simple tune with one finger, to the professional who achieves fame and fortune and to whom technical difficulties have almost ceased to exist The degree of success to be attained by a pianist, say, will depend first of all on the degree of the natural gift with which the aspirant starts, and secondly on practice The same may be true of the gift of divination

There are still a vast number of people who do not believe in what is commonly called telepathy or clairvoyance But the thousands of experiments made, both by the Society for Psychical Research—a strictly scientific body—and such distinguished researchers in this field as Professor J B Rhine and the mathematician Dr Soal, have already proved the existence of these phenomena up to the hilt So far as I am concerned, my own experience has confirmed all their results over and over again And I agree with Professor Rhine that there are probably millions of people in the world today who could make similar experiments and discoveries in this field with equal success

The one thing that seems probable to me, as far as my personal experience has gone, is that there is no need to assume the intervention of any supernatural forces or beings in orders to explain either telepathy, clairvoyance, or other means of paranormal communication

However, there are a great number of people who require to satisfy some emotional longing or calm some fear or sorrow by making some such assumption I do not for one moment question either the honesty or the sincerity

of those who believe in Spiritualism, the supernatural, or the possibility of communicating with the dead with the help of mediums, men or women, who use their paranormal gifts in this particular way.

When I was recently invited to join a committee formed to attend sittings with various mediums, I had had no previous experience of Spiritualism. My mind was completely open on the matter. I thought my previous experiments in telepathy and clairvoyance might assist me to assess the qualities of mediumship from a strictly intellectual and non-emotional angle and this was, to some extent, the case. And I was very interested indeed when, at one of the sittings, a remarkable instance of telepathy involved me personally.

The medium in question was a lady whose speciality was, she told us, psychometry. This is another technique for achieving telepathic contact with someone not present physically. It consists of giving the psychometrist an object to hold, such as a ring, a fountain-pen, a cigarette-case, or some similar article, and from which to glean information about someone who has been in contact with it previously.

When the sitting began, the medium was handed a wristwatch by one of those present, not by me. She held this in her hand and began to describe the impressions it conveyed to her. Suddenly, she said: "I am getting a name . . . it's the name of Morris . . . not the Christian name . . . the surname—and now another name . . . yes, I have it . . . John Morris."

Now this did not convey apparently anything of interest to the other members of the audience except to myself, for John Morris was, as I have related, the friend with whom I conducted a long series of telepathic experiments in 1935.

I am glad to say that he has not "passed over", but is still very much alive. On the occasion when this sitting occurred, Mr. Morris was holidaying in Italy. Nor was he at that moment in my conscious thoughts. There is no doubt, however, that subconsciously I connected him with such experiments, and that what had happened was that my subconscious mind had transmitted his name to that of the medium.

An even more interesting event occurred at the same seance. I had taken along with me a ring I had borrowed

from a woman friend It was a ring I had often seen her wearing, but I had absolutely no knowledge of its previous history The medium took this ring in her hand and then described a sensation she was feeling as if she had been dealt a terrific blow on the side of her temple. This experience, she said, came from a gentleman on the other side who had met with some tragic accident

When, a day or two later, I returned the ring to its owner and repeated the medium's statement to her—which at the time I had, of course, been quite unable to check—my friend told me that the ring had been given to her by someone who had met with a similar accident It happened that the donor had been a woman, not a man Nevertheless, this did seem to me a striking instance of telepathic contact in which I had been acting as a link in a chain which could be described roughly as follows the donor of the ring—the friend who had lent it to me—myself—and the clairvoyant But here again, this remarkably successful divination could, it seemed to me, be explained along perfectly rational lines

On one other occasion, a medium told me some facts about my own family background which were strikingly accurate The lady in question claimed that these facts were being communicated to her by the spirit of my mother, who did, in fact, die some years ago

Her statements were detailed, her estimation of my character was acute, and some of her observations, for example, with regard to my work, were extremely shrewd

However, at no time during the seance did I have the impression that the spirit of my mother was present The medium had told me nothing either about myself, my family, my background or my work, that it would not have been possible for her to ascertain by telepathic contact with my own subconscious, especially as I was keenly interested in and impressed by her statements and was deliberately putting myself into a passive and receptive condition mentally to make things as easy for her as I could

She made only one definite statement which could not possibly have been communicated to her mind by mine This was to the effect that my mother wished to remind me of a certain date, the 12th of September. I had found her technique so impressive that, had I been able to ascertain

that this date bore any relationship to any given event in the lives either of my mother or myself, I would have been prepared to go a long way in assuming that the medium was acting as a link between us.

On returning home, I immediately reported all the details of this seance, whilst they were still fresh in my mind, to my sister. We went into the matter very thoroughly indeed, checking both from personal recollection and family documents the dates of all the important events in our parents' lives, their birthdays, the dates of their marriage, their deaths, and those of any other outstanding family events we could recall. But we completely failed to find any record that appeared to be remotely connected with 12th September. And so once again I was compelled to conclude that this demonstration, although very remarkable, was simply another case of non supernatural paranormal cognition.

In this humble contribution to the subject under discussion, I have deliberately restrained myself to describing only my personal experiences with regard to paranormal phenomena and the conclusions I have drawn from them.

With regard to the very controversial subject of Spiritualism, my personal knowledge, as I have quite frankly stated, is extremely limited, nor do I propose to extend it much further. There are obviously only two possible approaches to the subject. The first is the objective, cool, intellectual approach of the scientific investigator. This, today, is being applied on a very big scale by such bodies as The Society for Psychical Research. Its members have at their disposal the necessary training, medical and psychological, the necessary apparatus, and the experience required for such an investigation. I have not, and even had I these essential prerequisites for such work, I would have neither the leisure nor the inclination to devote myself to it.

The second method of approach is the subjective, emotional one. Thousands who have suffered grief and bereavement through the loss of loved ones have undoubtedly found great consolation in Spiritualism. But this is a temperamental matter.

While it would be most unbecoming to deny to others the right to seek and find such consolation, for myself I feel no necessity for it. This is not because I have not

myself suffered grief or bereavement But my tentative experiments in and study of paranormal phenomena have revealed to me the great dangers attached to wishful thinking And no emotional satisfaction or consolation would outweigh for me the reluctance to become the victim of my own wishful thinking, auto-suggestion or self-deception

I believe that a certain amount of suffering is necessary for the full development of the human spirit It is only through suffering that we learn to understand ourselves and others, to strengthen our own wills, and to have compassion for the suffering of our fellow-creatures. Just as poetry is "emotion remembered in tranquillity", so spiritual development is the distillation of reflection based on suffering

It seems to me that it may be wiser and more worth while to take the harder but, in the end, more valuable way, than to seek consolation along a path that may be beset by grave spiritual dangers

REV CANON MARCUS KNIGHT, B D

In a book of this kind there are likely to be a number of disagreements But we all agree on one fact—which is that we are all mortal men and women

We exist, and we have to make something of our existence Life calls for decisions, which we have to make in the light of our total reading of the situation in which we are placed Every decision is based to some extent upon reasoning and also upon probability; we do the best we can with the light we have to confront the situations which we have to meet We are set in a mysterious world, and, like seamen, our business is to decide what port we are making for and then to plan our voyage accordingly Life must be a venture, and therefore each one of us must live by what he considers to be a reasonable faith, a "slant on life" which makes some sense of existence, gives some point to what we do, and takes account of the many-sided variety of life.

Now, all men share some experiences in common One can take the completely pessimistic view of Anatole France, and say that the life of man is summed up in the words "Men are born, they suffer and they die" In between they have, of course, moments of happiness But in the end they just die

Mortal men are men who come from dust and are on the way to dust again But we all know this, and it is this odd fact that we *know* that we are dust, and are destined to die, that makes us somehow different from all else in nature Man is mortal, and *knows* he will die; and that suggests there is some possibility in him of rising triumphant over death But is it natural to all, or is it something given to him from outside himself?

In some ways the old nursery rhyme about Humpty Dumpty is full of good, sound sense We are all like men who sit on the wall of human life and enjoy ourselves more or less while we have the time and capacity to do so But then comes the great fall at death, and all the King's horses and all the King's men will never put us together again! One might say this means that no State or political remedy

will solve this break up, we've just been cracked and smashed Can anyone put us together? Only a creative power which was able to make us in the first instance could remake us after such a crash; and that is why religious believers hold that only the Maker of the Universe can give men power to rise victorious over their last enemy, death

All men face the same facts of existence They know what it is to admire something which seems to them good, and then to enjoy what they know to be bad They all know the uncertainty of making decisions They all know, sooner or later, grief and trouble They all have to come to some account with death, which is always a solemn reality not to be treated lightly

Now all religions are concerned with these major matters much more than they are with behaviour and social problems and so on The real question is how can we get out of our prison We need to be set free Otherwise we are tangled up in ourselves, we don't know the way to go, we can only suffer dumbly like the animals, and we are bound to be eliminated by death These are the points where we can't help ourselves, and unless someone else helps us we have "had it".

But other people can't help us, for they are in the same boat Only deliverance *from outside* can help us, and that is where the Christian religion comes in with its conviction that Light and Help have come from outside to men who "sit in darkness and in the shadow of death"

This is the angle from which a Christian must approach his examination of psychic facts As he looks at the various facts he asks himself whether they strengthen or weaken this position, which he has reached as the result of his own encounter with life If psychic facts indicate that man is more than just a piece of material mechanism like a clock, then he is glad to have this assurance of what he already knew to be true

It is perfectly certain that man is more than a clock, or even than an organism which is fully to be explained in material terms The very fact that it is man's own mind which sweeps out to survey this vast Universe, and ponders on the minutely small, means that mind in man is of supreme importance As Pascal said, even if man is only a reed in this strange Universe, he is a "thinking reed", and

in that power to *think* he is more significant than the greatest star or the tiniest atom

There is a great deal more to be discovered about mind in man, and the way in which mind speaks to mind We are not entirely shut in to the methods of the five senses There are people who can, with some accuracy and with some error, read the minds of others They know what is in some other person's mind when that other person has told them nothing. They may be able to bridge distance and know of an event which has happened far away.

A friend of mine told me that one day in the recent war he was walking in Wales with a farmer who suddenly said, "Oh, my boy has been killed I just know it" He was quite right, for at that very moment his son had been killed flying over France

A similar story was told me by an R A F padre He was much impressed at the funeral of a young pilot by the courage and serenity of the bereaved mother He spoke to her after the funeral about this wonderful calm, and she said, "Yes, but you see I knew all the time On Tuesday at about 4 0 a m he came into my room and said, 'Don't worry, mother; I've been killed, but I'm all right' " Long before the official message reached her she was sure of what had happened, and fully prepared

Was it the spirit of the boy? Or was it that the love between the mother and the boy bridged the gap of space and personal existence, and that she "threw the picture" of the boy on to the screen of her dream life when the two personalities met one another in this communication? Experiences of telepathy are so common that surely we can accept them as genuine facts.

Many long-married people know the experience when one partner refers to a subject and the other says, "It's funny you should mention that, I was just thinking about it, too" How often does one receive a letter from a distant friend which crosses one which has just been written to him? Each was thinking of the other, and each was led to write

These are very simple illustrations There are many more If readers will study the book by Dr G. M. N. Tyrell, *The Personality of Man,* they will find a record of many instances, far more interesting and startling We don't know by half the full powers of the mind There is room for a

very great deal of careful research and study in these matters, and Christians need have no fear that their own faith is affected

We are indeed "fearfully and wonderfully made", as the Psalmist said If by scientific study of the mind and its powers we are led to an even deeper realization of the importance of the non-material side of our personality we can gratefully accept the new knowledge which the Almighty permits us to have Prayer for others calls for this cross influence of mind on mind, the Mind of God being the common field in which the prayer activity takes place The influence of mind over mind is seen in cases of hypnotism, and in the many well-attested cases of healing of the sick, even at a distance

Time after time, in the recent series of sittings which gave rise to this book, one saw instances of this power of certain "sensitives" to enter into the mind and experience of others, and to be able to state with a mixture of accuracy and error facts about people in the room which seem to prove that mind is not blocked off from mind by the existence of the body of flesh and blood

"We are members one of another," says the Scripture, and so some measure of mind-sharing between persons here and now need not surprise us Perhaps it is a gift we all possess a little, and which we could develop more if we gave more time and care to it

Is there any explanation of these psychic facts, whether we name them under the heads of telepathy, clairvoyance or recognition?

It might be that there is a common subconscious field underlying the seemingly separate individuals which we appear to be? In this case each of us would be as a little island cut off from other little islands, but deep under the surface there would be a common field of "lower-level consciousness" which we all shared But the Christian would not support the idea that the lower field was the one which mattered more, he would not want the "islands" to sink down into a common blankness

It may be that individual personality is a higher development out of this lower common denominator It may be that we have to learn how to unify individual persons together in a free society of selves in which they realize common love and mutual affection while still retain-

ing the highest values of their own individual personalities. The doctrine of the resurrection of the body sounds odd to many people, but what it is affirming is that in the purpose of God individuality, matter, and spirit have meaning

Matter is not necessarily only for the world we know here and now, and the special distinct contribution of, say, John Brown and Mary Brown is taken up into a higher existence It is not that the actual corpse of John Brown is revived, that must disintegrate into dust and ashes But in the higher existence of John Brown there is a mode by which the possibility of his being John Brown and known to Mary Brown is allowed for, and the same kind of distinctiveness which made each of them individuals here will exist after resurrection We have to beware of unreasonable materialism in thinking of the resurrection of the body, but we do not want to lose the value of the truth that the Maker of matter and spirit can and will use both in constituting individual personalities in a further order of being

The point we need to drive home (and it is one in which science, art and religion can surely all find some common ground) is that we human beings are responding to pressures and initiatives from a surrounding world which is not just dead and cold The world which we cannot see does exist and has something to say to each one of us

What it says must depend in some measure on the degree of interest we bring, and the kind of methods we employ, and what we are looking for

> O world invisible, we view thee,
> O world intangible, we touch thee,
> O world unknowable, we know thee,
> Inapprehensible, we clutch thee

So it seemed to the poet. But the experiences of artists and poets and writers and mystics and thinkers and all those who seek in a spirit of humble "sitting down before the fact", as Thomas Huxley said, give an answer. The reason why so many modern people never have any of these experiences is that they don't even begin to seek for them, and the only way is to start off with the faith and certainty that we do live in a world greater than we have begun to realize and that certain disciplines can open our eyes to a deeper knowledge of it

The exploration of new aspects of our own personality and human nature is a duty which we owe to science, to religion, and to ourselves; and (the Christian will add) to God as well

Finally, what are we to say about the possibility that the dead are communicating with us? The Christian is fully convinced that he is surrounded with a great cloud of witnesses, and that he and they are bound together by mutual love although sundered by death He believes that they are near him and with him, and that they still love and help him

Only a weak faith could ask for more; and it seems to me it is those who are weak in their faith who turn to Spiritualism as a cult, and choose it rather than the Christian religion It is difficult to state precisely what happens when people say that the dead are speaking to them through a sensitive. In all the recent sittings one felt that there was no fact stated by the medium which was not already in the mind of the person who was addressed

Scientifically rigid tests were not employed, so that if there was any artifice it was impossible to prove it But occasionally one felt artifice was there It must be a terrific temptation to sensitives to produce some results, and the amount of fishing for names and information which goes on means that the sensitive can have no access to supernormal information

Whenever sensitives ventured on theological or religious territory, there was no sign at all that they had anything fresh to say, and in most cases what they said was puerile and feeble It was all centred on the comfort and happiness of man rather than on the obligation of man to his Maker The whole level was far below the tone and challenge of the Christian Gospel

If one could sum it up in a revision of a famous saying, it would be "Broad is the gate and easy is the way that leadeth to life, and everyone shall find it" This is clean contradictory to the high demand of the Christian religion The Christian believes that he is under responsibility as a free person to his Creator, and that he cannot live with his Creator except on terms which involve righteousness, love, and obedience

The implications of the alleged communications are not religiously helpful They imply that all survive, and that

there is some part of our nature which cannot but survive. The most that they can show is that some departed spirits may survive for a time.

This is not Christianity, which holds that life after death is a gift, that it is given only to those who long for it because they long to live with their Maker and fulfil all that He has in mind for them. If they don't want it, there is no reason why they need have it. In any case, death means disintegration, and calls for resurrection, or remaking, a new creation only possible to the original Creator. "As in Adam all die" (i.e. by nature all men perish), "Even so in Christ shall all be made alive" (i.e. the power that raised Him can raise those who are devoted to Him). Spiritualists alter this to "As in Adam all die, even so in Adam shall all be made alive", implying *all* men must survive.

We do not know what the impact of human personality may be on our surrounding world. A man carves his name on a stone pillar in 1650, three centuries go by and still his name can be seen. It may be that a forceful man leaves a similar mark, a kind of dent in a non-material environment, which may be detected long after he has gone. It does not prove his *survival,* but only the sign of his *surviving influence.* That influence might be evil, and people can be sensitive to good and evil atmosphere in places where persons have lived and died.

It may be that there are numbers of low-grade types of beings which exist in this invisible surrounding world. It would be an impertinence on man's part to claim that he is the highest type of being that there is. There could be angelic beings, there might be demonic ones. We cannot disallow the possibility that such beings could turn men away from their proper duty to God and their neighbour by misleading them.

There were times in some of the recent sittings—when all light was extinguished and an atmosphere of sub rational expectancy was created by some luscious music—when one felt an undesirable and misleading purpose was at work. There was nothing to elevate the reason or the spirit, and much to depress and deaden it. One felt that a door was being pushed aside into a strange world, and that what came through might best be left where it was.

It was certainly not like heaven; it might have been

some place where wandering souls were left in darkness, trying to comfort themselves by a new contact with those who still enjoyed the life of this world

For my own part, I ended my course of contact with the mediums we saw with a less kindly view than I had when I began Evidently it is rather like vaccination—a little of it cures one of catching the whole thing!

I felt that the evidences of psychic facts were interesting, and that there is much room for careful study of the phenomena in so far as they help us to know more of human personality and may help to bridge some gaps, for example, as between science and Christianity But I do not find any evidence of contact with departed spirits

I do not find that any so-called communications from the dead have in any way illuminated either my reason or my spirit. The fact that the sensitives have to abdicate their own personality in order to become channels for these communications offends my sense of the dignity of reason and the honour due to individual souls.

Time after time we were called upon by these alleged spirits of the dead to have faith in them and in what they said But why put faith in them rather than in their Maker?

If He exists, and has indicated His purposes by acts and teaching, given through men and women of high character and through reason, action, and love, why should we turn away from all this to the more trivial easy comfort of these celestial (or uncelestial) cheer-leaders?

Men and women in this era feel themselves to be in a prison They need a way of liberation from the sense of being shut in to their own petty lives; of being morally weak, of being the victims of perplexing pain, and of having a date with death. They need to know why they are here, where they are going, and how they will get there

Of course they must make decisions about these matters, and advance with a reasonable faith that they are moving in the right direction The decisions they make are indeed for life and death, but if they move in the right direction they will be released from their prison and gain freedom from the power of death over the lives of men There is a more satisfactory way than that which is offered by Spiritualists; and it is based on the reasonable conviction that Jesus Christ is the Way, the Truth, and the Life

L. A G STRONG

I

The best thing to do, when we approach an uncharted domain of experience, is to set about ascertaining the facts. This means recording what happens—everything that happens—and taking care to form no theory which makes any of the facts hard to accept and tempts us to reject them

The facts which come under the survey of psychic research fall into two classes There are the phenomena produced under test conditions, predictable, and, in so far as the production of similar conditions may invite them to recur, repeatable Personally I prefer to call them imitable, since each occurrence of circumstances is unique, if only in point of time, but, for practical purposes, "repeatable" will do These phenomena, plus a very small proportion which occur in such circumstances as to allow of independent checking, are the only kind that come within the range of science; the only kind that can be said to offer evidence as the scientist understands it

The second class contains the far larger group of phenomena which happen spontaneously, to individuals, in circumstances which offer no grounds for acceptance beyond each individual's word This class of phenomena science cannot consider The scientist does not believe a thing because Mr Smith or Mrs. Jones says it is true It *may* be true; but no degree of conviction on Mr Smith's or Mrs Jones's part, no testimonial to their honesty, will influence the scientist. Very properly, he demands the same sort of evidence he would require in order to establish the cause of an outbreak of typhoid fever or the validity of a new theory about the properties of benzine

Thus the two classes of phenomena appeal to different faculties of the human mind The first appeals to reason, by demonstrating over and over again that certain preparations tend to produce a given result The second appeals to belief I say belief instead of faith, because faith is often taken to mean belief in something outside our experience, whereas many people believe in phenomena of this second class because, to the best of their competence

and knowledge, they have in fact experienced them.

At all costs let us keep these two classes apart. Let us distinguish between the *science* of psychic research, which deals with the first class of phenomena, and alone can offer evidence in the strict sense of the term, and the *art* of psychic research, which offers the only means of coming to terms with the second.

By making this distinction I do not mean to reserve reason and scrutiny for the first class only, and to extend an uncritical and lush credulity to the second. Art has its principles as well as science. I am concerned to be bound by no theory which cuts me off from experience, and thus to allow my whole experience to nourish my belief. There is more to me than a rational faculty deriving its nourishment from scientific experiments. That rational faculty, however, has its proper part in scrutinizing the data of experience, and in preventing me from making any new hypotheses to cover happenings which may be explainable in terms of what I already know.

To the orthodox Spiritualist this attitude is both painful and puzzling. He has his own *omnium gatherum* explanation for every phenomenon which seems to him outside the workings of the known agencies. It is the work of discarnate spirits. Sometimes it may be, but we are not justified in jumping to this conclusion if an explanation can be found in terms of earthly space and time. Where the known will suffice, we are not entitled to assume the unknown. The Spirtualists' trouble is that they repeatedly confuse the two kinds of phenomena and the attitudes appropriate to them. By lumping all under the one heading, and making them matters of religious belief, they are obstructing a rational approach which seeks to bring them within the sphere of natural law, and so relate them to the rest of human knowledge. I sympathize with the Spiritualists' faith, because I believe that each human being is an immortal spirit, and that death is the gateway to a new life.

I believe that the dead can and do communicate with us. My faith is based on what I honestly believe to be my own experience, fortified immensely by the experience of people whom I trust. If certain things have not happened to me, then there is nothing in the whole universe of which I can be sure. But I cannot accept the hypothesis that all

phenomena coming within the domain of psychic research are the work of discarnate spirits, and that these phenomena therefore offer evidence of survival

Let me put the matter in the simplest, most personal terms. If I believe, because of a personal experience, that a dead friend has spoken to me, I do not go about asserting that this is so Much less do I assert, on the basis of my experience, the general proposition that the dead speak to us If you, in perplexity, distress, or grief, ask me as man to man what I believe, I may well decide to tell you But I cannot assert that what I believe to have happened to me is a scientific fact I cannot ask anyone to accept survival and communication as facts because I say they are I can merely say that I believe these things to be true, and give my reasons

"But," says the convinced Spiritualist, "if you believe these things to be true, why do you doubt our evidence of their truth? Why do you bother to scrutinize it? Why do you go out of your way to explain it by telepathy, clairvoyance, and so forth? Why do you fight against us?"

To this I have several replies The first and most important is that no scrutiny can ever hurt the truth What is true will stand, no matter who investigates it. The second is that, by offering as evidence of survival a whole host of happenings that are vulnerable to scrutiny, and can be explained, and even in some cases imitated, on lines that do not transcend known laws, the Spiritualists delay the acceptance of the very truth they proclaim, and so involuntarily become its worst opponents

It is because I believe in survival, and in the power of discarnate spirits to make contact with those still on earth, that I examine to the best of my ability everything, which comes my way, that seems to bear upon these matters The integration of faith and reason is perhaps the main task of those who have been endowed with the capacity to think and to believe We are charged to make sense of *all* our experience Our temptation is to make sense only of a part, or, more deadly still, to exclude or deny what will not fit into our scheme

The Apostle Thomas was not a sceptic He was going to spend the rest of his life in telling people that a thing had happened, and, for their sake as well as his own, he wanted evidence.

II

The few seances which I attended offered considerable evidence of telepathy and clairvoyance, but none, that I could see, of survival or of the work of spirits. One incident might, on the face of it, have had an origin outside the circle of persons at the seance; but I do not see how it could be claimed with any degree of certainty for "the other side"

My conclusion was that the mediums whom I saw were honest in their belief that what they said was given them by discarnate spirits They themselves did not seem at any point consciously to originate what they said But there was no evidence of outside agency Nothing was said that could not have been picked up by ordinary telepathy or clairvoyance The voices of the so-called spirits or controls were easily within the compass of a good amateur actor the essential quality of the medium's voice never changed

It must be remembered that telepathy and clairvoyance often work together After a number of experiments in direct, willed thought transference while I was still at school, I received in Dublin an unwilled picture of the man who used to be the agent in the experiments narrowly escaping death by drowning in Cornwall unwilled, to the extent that he had no thought of me at the time I "saw" the whole scene from a short distance, the bay, the white lighthouse, the beach, failing only to identify certain dark objects to the left of the picture, which turned out to have been fishing boats

Later, at Oxford, I was sent by Sir Oliver Lodge to Professor F C S. Schiller, of Corpus, who made me the subject of a number of experiments The professor, a Mr Girdlestone, and I met on Thursday afternoons In one experiment we would endeavour to transmit a message or picture to the charlady of a colleague in London The charlady would sit relaxed over a cup of tea at half past four, for five minutes Mr Girdlestone and I would concentrate on whatever it was Professor Schiller had chosen, and the charlady would describe to her employer what she saw

One Thursday Professor Schiller went to his bookshelves, picked out a book of pictures, and, without himself looking, opened it and set it down before us. The page at which he had opened it showed an equestrian portrait of

King Charles I We duly concentrated upon it, then relaxed to enjoy our own excellent tea When the report came from London, the charlady had seen and clearly described the picture, with the perplexing addition of what she termed "a blinkin' great cannon" superimposed on the foreground So insistent was she on this that she crudely drew its outlines within the boundary lines of the picture

The picture we had been looking at contained no such feature But, sixteen pages further on, upon a page none of us had seen, and which was never opened at all during the tea party, was a large cannon, in the foreground, and in exactly the same relationship to the boundary lines as that seen and drawn by the charlady

Thus the charlady not only received what we transmitted, but added on her own account the irrelevant detail from another page of the book—as if she had come to have a look, overshot the mark, and looked in the wrong place Neither of us consciously saw, much less transmitted, the cannon Either the charlady saw it clairvoyantly, or one of us did without being aware of the fact Anyway, it popped in

The theory which I personally formed to account for this led me to forecast an apparently mad feature of a series of experiments devised thirty years later by Professor Whately Carington and carried out by Kenneth Richmond, who was then, I believe, Secretary to the Society for Psychical Research These experiments were intended to test precognition Professor Carington had made up into sets a number of closed envelopes, each containing the name or picture of a simple object A group of volunteers, usually from a dozen to fifteen, sat silent for a few minutes with pencil and paper, and wrote down or drew the first objects that came into their heads Then Kenneth Richmond opened a proportion of the envelopes from the first set, choosing them at random, drew the objects they contained on the board, and showed them to us, and we, each checking another's paper, registered the hits and misses The process was repeated with each set of envelopes

The theory behind this experiment was that, as the objects drawn on the board were shortly to enter our field of experience, we should be the more likely to foresee them I did not believe this, and privately foretold to Kenneth Richmond that we should be just as likely to see the objects

in the envelopes we did *not* open This guess, he later informed me, turned out to be correct

In parenthesis, I still cannot see how the experiment could offer any satisfactory evidence of precognition Suppose that six of the people present correctly described on their papers a certain object which was subsequently taken from one of the envelopes All that could be legitimately inferred would be *one* instance of precognition Any one of the six could have foreseen the object, and the remaining five could have picked it up telepathically from his mind

To some people this will seem a tiresome objection, made out of pure cussedness The difficulty is, however, all too real One day, simply to test the possibility of telepathy, I set myself to think hard of a certain homely object, which, as it turned out, was not included in any of the envelopes for that day, whether opened or unopened Five other papers contained this object, and one other something closely resembling it.

I do not suggest that telepathy accounted for all or nearly all of the instances of accurate forecast Still less could it account for the perception of objects in the unopened envelopes—and it is to this phenomenon that I want to draw particular attention, this apparent power of paranormal cognition, or the Psi faculty, or whatever you like to call it, which is largely independent of time and place, this dissociated perception, which can produce results so surprising as to suggest to those who are not on the lookout for it that discarnate spirits are at work I do not want to go on citing instances, many of which, I readily agree, do not offer evidence of the kind which I personally should require if anyone asked me to accept them as fact I merely want to show that my fundamental belief that man is an immortal spirit does not necessarily make me credulous over the whole area under discussion

As human beings, we have to base our judgments on our experience and the experience of people whom we trust This we do every day, when we entrust our lives to the engine driver, to the pilot, to the doctor, to the sanitary engineer We do not demand a certificate of proficiency from the engine driver before we get into the train, nor, when we are brought into the hospital casualty ward, do we require testimonials as to the efficiency of the house

surgeon who is to set our broken limb. We have a large measure of trust in professional people, because experience has told us that we may trust them safely.

In matters touching our inner lives, we do not give our trust so readily. Our own experience is of paramount value to us, yet, if only because our own experience is so limited, we have to put a certain degree of trust in other people. Thus I, for one, accept the word of a few people whom I know thoroughly well, and whom I believe that I can trust completely, when they tell me of certain things that have happened to them. My acceptance is all the easier when these experiences correspond to or amplify certain things which have happened to myself.

Of these inner experiences I do not propose to write, for the simple reason that I can offer no evidence for them. Your belief in them would therefore depend on whether you took my word or not. If you did not, then possibly I would have harmed certain things which seem to me of supreme importance. If you did, you would be believing in something without having evidence for it or knowing well the person who told you about it—a thoroughly unsound proceeding.

III

In all our investigation of psychic phenomena we run up against the central difficulty of getting adequate evidence for them. Laboratory work, which, as we have seen, deals with imitable phenomena under test conditions, is unlikely by its very nature to take us far. The phenomena remain relatively trivial, and the statistics undramatic.

The man in the street, whose outlook is very often materialistic, cannot understand why this is so. On purely materialistic grounds it is difficult to find him a satisfactory explanation. The clearest explanation which I have heard was that offered by Dr. E. Graham Howe at a conference held in Brighton in the spring of 1950, on Science and Psychic Research. This explanation, however, involved a theory of values which some people would not accept. Dr Graham Howe postulated a centre for the created universe, an absolute, a central unity, which some would identify with the Creator, and others would prefer to keep undefined. He then postulated another point, B, the created world, the world of things, the place on the circum-

ference where we live and move and have our being. The radius connecting the still unity of the centre with the active multiplicity of the point on the circumference, the line connecting A and B, Dr Howe called C. Psychic phenomena, he said, happened along this radius, C, at varying distances from B, distances determined by their depth and value.

In the laboratory, B, one could only take accurate stock of phenomena at B. Psychic phenomena did not belong to B. The laboratory worker was therefore trying to assess C in terms of B. He was judging and evaluating them by a wholly inadequate standard of reference. It was the artist, the mystic, the priest, the man who dealt in values, who was better equipped to appreciate and understand C phenomena. Only with reference to a standard of values could C be understood.

I would amplify this by saying that the laboratory experiment appeals to a part of man only, his reason, his brain. But man is more than brain. He has a heart, a centre of feeling. The world of values is that world where the importance of things is decided by what we feel about them. This does not mean that our brain cannot usefully consider them, too. It must consider them; we must bring to our experience every faculty we have, brain included, if we are to make sense of what happens to us. In the plainest terms, we must approach these phenomena as human beings, with all of ourselves. The laboratory worker is doing useful and essential work, but more than laboratory work is needed. Laboratory work, scientific analysis, will never yield more than a part of the truth. Laboratory work is essential, since only by determining how many of these phenomena, and what aspects of them, can be investigated on strictly scientific terms, may we establish their relation to the rest of that knowledge which science organizes. Only in virtue of what we so discover can we offer them as facts in the same category with other scientifically ascertained facts.

But there is a great deal of life which science does not cover, from which indeed it explicitly dissociates itself. Science is limited to describing the structure of things. It has no concern with their immaterial qualities. Science can analyse the alternations of sound and silence that go to make up a piece of music, but is quite powerless to explain why one piece is an immortal masterpiece and another in

similar form is ephemeral rubbish Science can analyse the chemical components and anatomical proportions of a human being, but give no qualitative account of his personality

Eddington, Whitehead, Jeans, Sullivan, and many others have made this point, if only in order to defend science from the charge of failing to do something which it has never claimed to do

My personal position, then, when confronted with these phenomena, is that we need both a science and an art of psychic research My faith that each human being is an immortal spirit is based partly on my own experience and partly on the experience of people whom I trust When I come to consider phenomena, I use the approach of the artist, which, after all, is my approach to all my other experience, that is to say, I consider them on a qualitative basis, with all my faculties as a human being

I cannot claim in any way to be a scientist, but I endeavour to scrutinize with my reason all phenomena on the basis of which claims are made, everything which is offered to me as evidence, and I try to proceed on the common-sense axiom that, if something can be explained in terms of what is already known, it is unsound and waste ful to attribute it to an unknown cause

POSTSCRIPT BY HANNEN SWAFFER

WHAT is not generally understood is that every challenge put out by anti-Spiritualists for a century or more has been met and answered

Newspapers foolishly accept the ridiculous explanations made by conjurers who seem to think that because they can palm a playing card they can explain away the supernormal Yet when, in 1932, Maurice Barbanell and I debated the subject with the Magic Circle we gave them such a hiding, so mockingly jeered at their pretensions, and so effectively blew their arguments sky-high that I am surprised the Magic Circle dares to go on with its pretence of being experts in explaining psychic phenomena It should stick to amusing the children with tricks bought at Gamage's

I myself became a vice-president of the Magicians' Club, which was a much more important body than the Magic Circle, after I had been invited to one of its meetings at which Arthur Prince, best-known of all British ventriloquists, was to "expose" the direct voice He made such childish statements as "When I went to a seance with the centre-forward of the Newcastle Football Club—oh, nothing happened that night" Did he think it was a goal-kicking competition?

When he declared, "All direct-voice mediums are frauds" and said it was done by ventriloquism, I challenged him to throw his voice over my shoulder, reminding him that ventriloquism could not take place in the dark because it was an optical, and not a vocal, illusion

Then I dared him to say that Dennis Bradley, a direct-voice medium, whom I had taken with me, was a fraud "He is not a poor little man in a back street," I said, "but a rich tailor in Bond Street who will issue a writ for slander against you tomorrow if you accuse *him* "

My host, that night, was William Goldston, who used to make Houdini's magical appliances, and who was himself a Spiritualist convinced by his own automatic writing Goldston, by the way, assured me that J N Maskelyne, who

had attacked Spiritualism for years, died a believer in super-normal phenomena

Who are these psychical researchers? Some of them are men who dare not admit in public what they often say in private—that they have seen proof of super-normal activity

Through all the years and on innumerable occasions the case for anti-Spiritualism has been blown to smithereens in public

One psychical researcher admitted, but as if in great sorrow "It is regrettable that, in so many instances, the phantoms resembled deceased persons"

After I had spoken on Spiritualism in the largest hall in Copenhagen, Dr Walther, a woman who had been secretary to Baron Schrenk-Notzing during years of his long psychical research, gave me an instance of the unfairness to mediums even in the accounts of sittings published by "enlightened" scientists.

"Olga", said to be Lola Montez, the Spanish dancer, was the guide to Rudi Schneider and it was as "Olga" that Dr Walther always addressed her

"Don't call her that," once said the Baron "It's Rudi's secondary personality"

"Well, if I'm only that, I won't help you," put in Olga. "Until you apologize, I will not control the medium"

"We can get along without you," replied the Baron

At the next sitting, and for days after, he hypnotized Rudi to bring out the "secondary personality"

But, for a long time, he hypnotized in vain Nothing happened

At last, Olga returned, and obtained the Baron's profuse apology Then the phenomena started again.

On another occasion, said Dr Walther, Schrenk-Notzing was sitting with Rudi, testing raps in broad light and in the company of a group of doctors

One, a hypnotist, willed that the medium should walk across the room and rap on the wall.

When he did so—some mediums are particularly sensitive to hypnotism when in trance—the mesmerist said: "So that's how it is done!" He was satisfied with his own childish explanation

Yes, psychical researchers are strange people I remember sitting next to a Society for Psychical Research's observer

in Dennis Bradley's home when Valiantine, the direct-voice medium, was being tested

On that occasion, although Valiantine was a small-town American, Japanese was spoken to Gonnoske Komai, the Japanese poet, and the Countess Ahlefeldt-Laurvig, wife of the Danish Ambassador, was talked to by a spirit in Russian

"Why does he talk to you in Russian, Countess?" I said, thinking she was a Dane

"I am Russian born, and it is a message from my brother," she replied

At the end of a sitting at which several foreign languages had been spoken, I asked the psychical researcher, being curious about his scientific attitude, "How would you report a sitting of this kind?"

"I was very interested in one of the raps," he said

"What do you mean?" I asked.

"I was rapped on the right shoulder," he said

"But," I replied, "I could have done that in the dark, for I was next to you But I could not talk Russian or Japanese!"

Many psychical researchers never face up to the fact that every scientist of note who has started an inquiry into psychics, *and gone on with it,* has, in the end, admitted that the Spiritualist hypothesis is the only explanation that covers all the phenomena

These scientists include Sir William Crookes, then the greatest chemist in Europe, who, half a century ago, announced that he was going to inquire into Spiritualism

"Now this hocus-pocus will be exposed at last," said *The Times,* in a leading article

When, about a year later, Crookes announced that he was a Spiritualist, *The Times* did not mention the matter On another occasion, *The Times* solemnly stated "We shall only be interested in Spiritualism when a medium can foretell the winner of the Derby"

The Old Lady of Printing House Square did not know that mediums had done this many times—quite as frequently, indeed, as her own racing tipster

Another successful inquirer was Camille Flammarion, the distinguished French astronomer

You would not consider Lombroso, the most widely recognized criminologist of his day, to be credulous Yet he,

after a long examination, also accepted the Spiritualist case.

Then there was Alfred Russell Wallace, a man of such distinction that he is known as the co-discoverer of Darwinism. He, too, became a Spiritualist after a long investigation.

There was also, of course, Sir Oliver Lodge, finest physicist of his generation, who boldly came out with a whole-hearted acceptance of the Spiritualist claims. Some people laughed, "The old man's gone off his nut because he has lost his son."

They did not know that Sir Oliver first met Sir Arthur Conan Doyle when they were both waiting to be knighted in Buckingham Palace, and that Doyle then said to Lodge: "Aren't you interested in psychical research? I have had twenty years of it."

"I have had longer than that," replied Lodge.

Yet it was not until their sons died in the First World War that they became Spiritualist advocates. The reason was that, being mourners themselves, they felt they had a message of comfort for other mourners.

Everyone who inquires into Spiritualism starts like a little baby boy in an infant class. He will accept Lodge on physics, but not on Spiritualism. He will accept Crookes on chemistry, but not on psychic phenomena. And so we have to waste our time in one perpetual kindergarten, teaching the A B C to every whiskered scientist who believes all he is told about Mars, although he has never seen it, and would not recognize it if someone showed it to him through a telescope. He accepts nearly everything that any other scientist tells him—unless it is about proved survival.

Many psychical researchers who talk glibly about our credulity seem to be strangely credulous about accepting the ridiculous theories invented by other so-called researchers, Harry Price's fantastic "cheese-cloth" statement, for instance. They did not know that, privately, Price accepted the Spiritualist hypothesis.

I remember how, at a lunch of scientists interested in psychical research, Dr. William Brown, the distinguished psychologist, was present. I poked mild fun, in a short speech, at their scepticism, only to hear Dr. Brown say from the other side of the table, "I am nearer to you than you think."

Afterwards, Dr Brown revealed that he was his own automatic writing medium

It was automatic writing that convinced Sir Marshall Hall, who took the chair, at the Queen's Hall, at the first meeting I addressed on Spiritualism No one could say that the most trenchant criminal cross-examiner of his day was a credulous man Am I credulous? By nature, I am a cynic

I see that Canon Knight, of St Paul's, was a very sceptical member of the Panel Has Canon Knight consulted Dr. Matthews, his superior at St Paul's, where he is the famous Dean who was called in, with Dick Sheppard, to save St Paul's Cathedral when its congregations had fallen to a mere handful of people?

Dean Matthews sat on the committee appointed by Dr Temple, when he was Archbishop of York, to inquire into Spiritualism The members of that committee, which was afterwards officially adopted by Dr Lang as Archbishop of Canterbury, and which sat for two years, included Dr William Brown, Canon Anson, Master of the Temple, and Canon Grensted, examining chaplain of the Archbishop of York and one of the most distinguished theologians in the country Their chairman was the then Bishop of Bath and Wells

If Canon Knight has asked Dr Matthews, he will have told him that, after their long inquiry, these and other members of the committee came out on the side of Spiritualism in a long report in which these words were used

"It is clearly true that the recognition of the nearness of our friends who have died, of their progress in the spiritual life, and of their continuing concern for us, cannot do otherwise, for those who have experienced it, than add a new immediacy and richness to their belief in the Communion of Saints

"There seems no reason why the Church should regard this vital and personal enrichment of one of her central doctrines with disfavour

"Certain outstanding experiences of individuals, including certain experiences with mediums, make a strong prima facie *case for survival We think it probable that the hypothesis they proceed in some cases from discarnate spirits is the true one*

"If Spiritualism, with all its aberrations set aside, con-

tains a truth, it is important to see that truth, not as a new religion, but only as filling up certain gaps in our knowledge, so that where we already walked by faith, we may now have some measure of sight as well

"The Church should set up a body of people who, under its direction, shall keep in touch with groups of responsible persons who believe in Spiritualism"

Yet—would you believe it?—this committee's report, despite the high repute of its members, was suppressed by Dr. Lang, the Archbishop of Canterbury! Then its suppression was defended, right up till the week of his death, by his successor, Dr Temple, a man famed for his honesty of purpose and in the opinion of many the finest of all the Primates in Anglican history!

If the report had gone against Spiritualism, it would no doubt have been published

Dr. Matthews, soon after the conclusions were suppressed, told the Society for Psychical Research that one of the things discovered by the committee was that a number of people had found in Spiritualism a confirmation of their Christian faith and had, because of this, turned away from agnosticism to belief This he said was the "unexpected fact" discovered by the committee Dr Matthews also boldly protested against the Primate's pigeon-holing of the report

"Spiritualism's evidence rightly used," commented Canon Grensted, "would confirm the faith of quite a number of people who are uncertain about the Resurrection—and I think it often does"

When I was editor of *The People* in 1924—I was not then a Spiritualist—I published extracts from a book called *The Heart of a Father,* in which the Rev F C. Spurr, a leading Baptist minister, described how spirit photography had proved to him that his son lived beyond the grave. He told me, afterwards, that he had got into such serious trouble with the leaders of his denomination because he invited Sir Oliver Lodge to address his congregation in Birmingham that his wife had not obtained what she had longed for—the chairmanship of the Baptist Women's Committee

Dr. Norman Maclean, formerly Moderator of the Church of Scotland, confessed that it was not until he had inquired into Spiritualism that he had understood the Resurrection

As for the Wesleyans, they were once broad-minded enough to give full leave to the Rev C Drayton Thomas to go on with his psychic investigations He has often spoken on Spiritualist platforms, proclaiming his new-found knowledge

My advice to psychical researchers is to do what I did—become a member of a home circle In the four or five of which, one after the other, I have been a constant attendant for a quarter of a century, I have seen, with no professional medium within miles, so far as I know, all the phenomena of Spiritualism

We have developed, as constant sitters, such extraordinary powers that, in one circle, the direct voice—that is, the actual voice of a so-called dead person—was so loud that it could be heard in the street outside In this circle, messages came in at least eight languages understood by one or other of the sitters

I have had, in my flat, psychic phenomena so remarkable that it included, whenever one medium friend—he was an anti-Spiritualist who, being a Theosophist, objected to psychical phenomena—played a certain Hawaian tune on our piano, it would jump violently in the air in broad daylight!

It's no good saying "What is the good of that?" I do not challenge Christians who talk of the goodness of God to justify the existence of the cancer germ, which, after all, has been very kind to doctors

Now this piano-jumping was seen, on various occasions, by scores of people Sir Henry Segrave, a constant visitor to my home, told a luncheon party when R. D Blumenfeld, then editor of the *Daily Express,* was present, that the only time he had been frightened, although he was a racing motorist, was "when I saw the piano jump in Hannen Swaffer's flat".

Strangely enough, the only witness who did not admit that the piano jumped was Lord Charles Hope, who was a psychical researcher

"You've seen it, haven't you?" I said to him, when I was telling Sir James Dunn about the jumping piano

"Oh, I wouldn't go so far as that," he replied

"How far would you go?" I persisted "Either you did see it or you didn't"

What did he see? Nothing?

"Mass hypnotism," a scientist may explain

If it were that, why did Graham Simmons, an artist who lived underneath us, complain of the noise on his ceiling?

"It would take three tons of machinery, if it *were* machinery," said Will Goldston

One particular thing I must stress is that any group of people who sit for development regularly, in sincerity and honesty, in a room together, discussing anything—talking about the latest play, for instance—will almost certainly develop, sooner or later, some sort of psychic power Then they can apply every possible test at their leisure

They could be Plymouth Brethren They could be West Indian ju-ju worshippers, cannibals, or Buddhists in a Tibetan monastery Psychic power is no monopoly of Spiritualists It is a universal law, governed by neither time nor place nor race nor religion

I would not be a practising Spiritualist, for I never wanted comfort nor conviction that I survived—frankly, I would rather not survive, if I could choose—unless I knew that, every now and then, my knowledge can be of invaluable help to some person in trouble—someone who is sick, or someone who is in an agony of despair because of personal loss To explain this, I will mention one or two cases

Not long ago, I was asked to see Merle Oberon, who was in grave distress because, a few weeks before, she had seen her Italian fiancé killed at her feet by a fall from an aeroplane

I called up Mrs Lilian Bailey and said I wanted her to meet me at a house in Mayfair at seven o'clock that night I did not mention Merle Oberon's name I did not say that it was the home of Douglas Fairbanks, in case that might give a clue

Indeed, I arrived there early and myself opened the door to Mrs Bailey, in case the butler might mention a name, and took her into a drawing-room where Merle Oberon—who was unknown to her—was waiting

Within a few minutes, despite the attempt of her spirit guide, Bill Wootton, who did not want his medium upset by a strange control, to stop him, the dead fiancé entranced the medium, embraced Merle Oberon in a joy of reunion and assured her that she need not fear that he had felt any suffering, because he died instantly

Unfortunately, this most dramatic scene was too much for the film star. I do not blame her that she could not accept my assurance that I had not told Mrs. Bailey who she was and that Mrs. Bailey knew nothing whatever about her sitter.

Miss Oberon afterwards had another sitting with Mrs. Bailey at which I was not present. Still she was not satisfied.

Then, weeks later, she came to have tea with me on my seventieth birthday. She told me that she had made an inquiry on her own, without telling me, and that she was perfectly satisfied with the evidence that her beloved sweetheart had survived the grave.

A few weeks before she had been a broken woman. She came to tea with a re-established faith—smiling and confident.

Then I remember when one of the King's most intimate friends called at my flat.

"I am in grave trouble," he said. "I have lost my wife. I am a broken man and I cannot go on!"

Twice he sat in my flat with Lilian Bailey. On the first occasion there was a scene so full of emotion that I hesitate to describe the tenseness of its drama. Soon, my new-found friend and his wife were reunited in an ideal marriage which had been shattered by "death".

"I could not have gone on," the husband said some time later. "I was even thinking of suicide."

Millions all over the world can tell similar stories of how they have been comforted.

On another occasion, one of the best-known front bench Members of Parliament told me that he did not feel he could go on. He was facing political difficulties and business disillusionment. Much worse than that, he had lost two dearly loved children, both in most tragic circumstances. A coroner's jury had said, to his great grief and boundless indignation, that one of them had committed suicide. This he could not believe.

I took Mrs. Bailey, who again did not know where she was going or whom she was going to see, to his house. One of his "dead" children gave evidence which both her father and mother denied until, later on, the old nurse came in and said: "Don't you remember?" She then recalled all the circumstances that their "dead" child had

described That explains away the "reading the sitter's mind" hypothesis

Then my friend received, in a most dramatic and inspiring address, proof that he was not a failure, although he thought it

"If you could only see this room as I see it," said a spirit guide, "you would not think, as you do, that your life is a failure You would know that it was full of thousands of spirits who want to thank you for what you have done for humanity, for health, for education and the relief of poverty My son, you are indeed blessed"

That family has been transformed Faith has swept away doubt Consolation has entered where there was only sorrow

Then there is another Member of Parliament, one I knew only slightly until, in the following letter, he asked me to dine with him

> *"I wonder can you help me My lovely and adored wife left me a few weeks ago I am now bereft and anchorless.*
>
> *"I've tried honestly to turn back to work; but all the time, during my thinking days and sleepless nights, two queries constantly haunt me Is she happy—happier than she would be here amongst her friends and little family whom she loved and who loved her so? And the other is—when my work is done here, shall I join her?*
>
> *"If I could be satisfied on those two points, I could almost be happy You have studied so much and so earnestly the link between our two worlds or the path between them that I am turning to you with just a little hope For I am so ignorant"*

The religion of his boyhood had failed him when he went back to it for solace and knowledge

And it will fail everyone who requires, not assertion but proof, and who, when "faith" fails him, demands fact

Soon, however, my friend was reassured by psychic experiences

Those, only Spiritualism can give For it rolls away the stone of death It bridges the gulf between the two worlds, enabling them to unite in love and in service to mankind

Yet, mind you, all this is illegal. I am liable to imprisonment for "witchcraft" every time I sit in my own home circle They boasted in the Atlantic Charter of the Four

Freedoms, including "freedom of worship" But I belong to the only religion which is illegal in Britain Spiritualism is still subject to prosecution and persecution Parsons who complain that there is no religious freedom in Soviet countries won't help me to get any in their own

How can truth prevail if the law declares it illegal; if psychical researchers ignore the facts or continually invent new theories to explain them; if Church dignitaries run away; if archbishops suppress their own report compiled by their own clergy, and if, every time a discovered fact contradicts a preconceived theory, the theory is clung to and the fact rejected, or else a new theory is invented?

A century ago, Horace Greeley, the most prominent American journalist of his time, championed the Fox sisters, upon whose phenomena the Spiritualist movement was started, and was, therefore, assailed and lampooned.

Even so, afterwards, he stood as candidate for the Presidency of the United States

Not many years since, he turned up at my home circle

"I have seen your statue in New York," I said

"They did not give me a statue because I was a Spiritualist," he replied in a long speech "I had trouble with my proprietors They used to say 'Old Greeley has gone off his head' But I printed the truth They always give you a statue afterwards and curse you when you are alive "

He told how he once saved the Fox sisters from being stoned to death and talked of "all the cunning, all the graft, and all the might of priestcraft that has been between this great truth and the hungry world that needs it"

"This is Horace Greeley, who just dropped in to urge you all to stand by the truth that he stood by in days when it was worse than it is now," he ended "You can say I have been They won't believe it, but that doesn't matter "

Robert Falcon Scott was a friend of mine, a man from whom I helped buy for a newspaper, before he left England, the photographs of a journey which is now one of our race's most inspiring exploits

Years afterwards, wanting a new idea around which to reassemble old facts, I called up Teddie Evans, captain of the *Discovery*, now Lord Mountevans, and said "I am speaking tonight at Queen's Hall on Spiritualism, and I want a new beginning for my address How can you prove

that Scott really reached the South Pole? Is the flag th
he planted on the Pole still flying there?"

"Heavens, no," Evans replied "It must have been blov
away years ago"

"Is the cairn in which he was buried still something y
could visit?"

"I should think it was buried by snow a few mont
after it was erected," was the reply

"Could the photographs have been taken on Ealin
Common in a snowstorm?"

"Perhaps," admitted Evans

"Could Scott's diary have been forged?" I went on

"Well, there are forgers," said Evans

"Then what facts have you to prove that Scott ev
reached the Pole?"

"The word of men who could not lie," said Evans

"Thank you," I said "That is what we say about t
Spiritualist case!"

For over a century men have inquired, been convinc
and, being truthful, have told the world exactly what h
happened But each of them has been rather li
Christopher Columbus

Columbus sailed across the Atlantic and returned sa
ing that he had discovered America Actually, he was m
taken, because he had only reached the Bahamas But
had discovered somewhere. He brought back birds a
plants and such things to prove his case, but nobo
believed him

Then, in turn, other men went across the Atlantic a
all came back with a similar story Gradually the fact th
there was land across the Atlantic was generally admitted
so much so that all of us, whether we have been to t
United States or not, accept without question that the
is such a place

So it is with Spiritualism Millions have inquired,
years because they have lost loved ones, or merely out
curiosity, as I did, and have told their story

In the early days people risked persecution, victimi
tion and obloquy Because of their courage, the case
accepted by so many who have added their testimony th
Frankly, an honest man can admit the case for Spiritualis
just the same as he can admit the case for Mars, or t
case for the South Pole, or the case for the United Stat